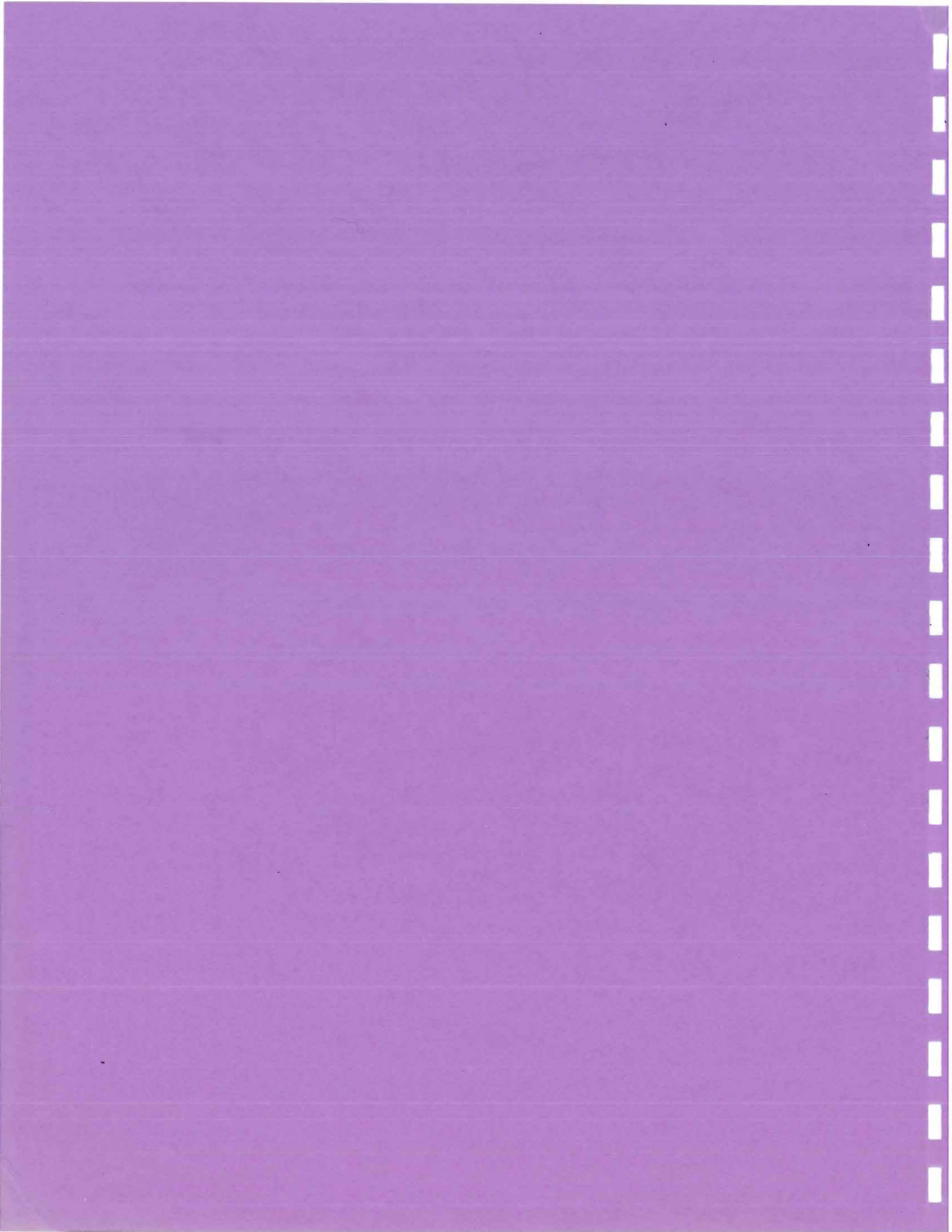


**WATER QUALITY IN IOWA
DURING 1998 AND 1999:
ASSESSMENT RESULTS**



**Iowa Department of Natural Resources
Jeffrey R. Vonk, Director
2001**



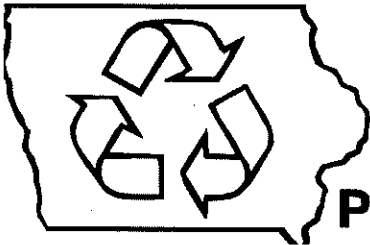
WATER QUALITY IN IOWA DURING 1998 AND 1999: ASSESSMENT RESULTS

Prepared by:

**Water Resources Section
Water Quality Bureau
Environmental Protection Division**

2001

**Iowa Department of Natural Resources
Jeffrey R. Vonk, Director**



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Assessment Results: Introduction**

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Water Quality in Iowa During 1998 and 1999 Assessment Results: Introduction

I. INTRODUCTION

This supporting document for Iowa's 2000 Section 305(b) report (*Water Quality in Iowa During 1998 and 1999* (DNR 2001)) presents information on the degree to which individual Iowa waterbodies (rivers, streams, lakes, flood control reservoirs, and wetlands) supported their beneficial uses during the biennial period from October 1997 through September 1999. This report does not contain information on groundwater quality (for information on groundwater quality, see *Part IV: Groundwater Assessment* in *Water Quality in Iowa During 1998 and 1999* (DNR 2001)). This report presents assessment information for the 6,400 miles of streams and rivers, 136 publicly-owned lakes, four flood control reservoirs and 88 publicly-owned wetlands assessed for the 1998-1999 period.

This document contains information only for those waterbodies that were assessed for the 1998-1999 biennial reporting period. This format differs from recent versions of this document (e.g., DNR 1997f, 1999d, and 1999e) where historical assessment information for all Iowa waterbodies—whether assessed for the current report or not—was included. This change in format is related to Iowa DNR's use of U.S. EPA's Section 305(b) *Assessment Database* (ADB) in preparation of the 2000 report. Information in this document was extracted from the Iowa ADB; all assessment information for Iowa's 2000 305(b) report has been forwarded to the U.S. Environmental Protection Agency.

Classes of Iowa waterbodies assessed:

All surface waters in Iowa are classified for protection of **general beneficial uses**; selected waterbodies are also classified for **designated beneficial uses** (see Section 61.3 of the *Iowa Water Quality Standards* (IAC 1990)). All surface waters in Iowa, including those designated for Class A, B, and/or C beneficial uses, are classified for the following **general beneficial uses**: livestock and wildlife watering, non-contact recreation, crop irrigation, and industrial, agricultural, domestic, and other incidental water withdrawal uses. Surface waters classified for protection of **designated beneficial uses** maintain flow throughout the year or contain sufficient pooled areas during intermittent flow periods to maintain a viable

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Assessment Results: Introduction**

aquatic community. Surface waters in Iowa can be *designated* for one or a combination of the following beneficial uses:

Class A (Swimmable) uses involve primary body contact with the water and include activities such as swimming and water skiing where ingestion of water is likely.

Class B (Fishable) uses involve secondary contact uses (for example, wading) and protection for wildlife, fish, aquatic and semi-aquatic life. For purposes of Section 305(b) reporting, **fish consumption use** is considered a Class B use.

Class C (Drinking Water) uses include river segments, publicly-owned lakes, and flood control reservoirs that are used as a source of potable water for a public water supply. Uses designated for Iowa waterbodies are described in the *Iowa Water Quality Standards* (IAC 1990, 1996).

The majority of waterbodies assessed as part of Section 305(b) reporting in Iowa are classified for one or more of the above designated beneficial uses, with nearly virtually all such waterbodies being designated for Class B (aquatic life) uses. In addition, selected “**general use only**” waterbodies from the following groups were assessed:

- publicly-owned lakes and wetlands not yet designated for beneficial uses in the *Iowa Water Quality Standards*;
- streams classified only for “general uses” in the *Iowa Water Quality Standards*.

To be compatible with the U.S. EPA *Assessment Database*, a state’s surface waters need to be defined as “waterbodies.” Thus, Iowa’s rivers, streams, lakes, and wetlands designated for fishable, swimmable, and/or drinking water uses in the *Iowa Water Quality Standards* have been defined as waterbodies. Most smaller streams are defined as a single waterbody that extends from the mouth of the stream to its headwaters. Streams and rivers draining more than 250 square miles are divided into two or more waterbodies. Typically, only the

**Water Quality in Iowa During 1998 and 1999
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portion of the river/stream waterbody that is designated for beneficial uses is assessed for Section 305(b) reporting. Each publicly-owned lake, wetland, and flood control reservoir is defined and assessed as one waterbody.

The following information is presented in this report for each Iowa waterbody assessed for the level of support of beneficial uses during the 1998-1999 Section 305(b) reporting period.

Waterbody Name: The name of the waterbody is listed as it appears in the *Water Use Designations of the Iowa Water Quality Standards*. A **description** of the waterbody follows the Waterbody Name. Waterbodies for most small and mid-sized streams are described as “mouth to headwaters.” Waterbodies of streams that have been divided into two or more waterbodies are described by downstream and upstream boundaries (usually confluences with tributary streams). Each publicly-owned Iowa lake, wetland, and flood control reservoir is considered to be one waterbody, and waterbody descriptions are not provided for these waterbodies. Waterbody locations, however, are provided for lakes and wetlands and include county, section, tier, range, and distance to a nearby town.

Waterbody ID No.: Each river/stream segment, lake, wetland, or flood control reservoir in Iowa that is designated in the *Iowa Water Quality Standards* for either fishable, swimmable, or drinking water uses has a unique waterbody identification number. In addition, the selected “general use-only” waterbodies assessed for the biennial period have been given unique waterbody ID numbers as well.

Using the waterbody identification number for Rock Creek near Clinton, Iowa (**IA 01-MAQ-0010**) as an example, the fields of the waterbody identification number are defined as follows:

IA: designates the state of Iowa.

01: designates the major river basin in which Rock Creek occurs (Northeast Iowa River Basins). Other major river basins are the Iowa-Cedar Basin (02), the Skunk

**Water Quality in Iowa During 1998 and 1999
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River Basin (03), the Des Moines River Basin (04), the Southern Iowa River Basins (05), and the Western Iowa River Basins (06).

MAQ: designates the subbasin (Maquoketa River subbasin) in which Rock Creek occurs. Several subbasins exist within each major basin. The abbreviation for a subbasin is taken from the largest tributary of the subbasin. For example, **UIA** designates the Upper Iowa River subbasin, and **TRK** designates the Turkey River subbasin in the Northeastern Iowa major basins.

0010: a sequential number that hydrologically locates a stream or lake within a subbasin. For example, Rock Creek is the most downstream waterbody in the Maquoketa River subbasin; the next waterbody upstream from Rock Creek is Mill Creek (Waterbody IA 01-MAQ-0020).

Subsegment Number / Identifier and **Description**: Iowa's river and stream waterbodies are often divided into subsegments for purposes of Section 305(b) assessment. Lakes, flood control reservoirs and wetlands are not divided into subsegments for Section 305(b) reporting. Each waterbody ID number for a lake or wetland, however, has the identifier "L" appended to the ID number. If a river/stream waterbody is not divided into subsegments, the subsegment number will be zero (0). If the waterbody is divided into subsegments, the most downstream subsegment will be identified as subsegment 1, with subsegment numbers increasing in an upstream direction. A description of each subsegment follows the subsegment number/identifier.

Waterbody Type: For purposes of Section 305(b) assessment, Iowa's publicly-owned lakes, wetlands, and flood control reservoirs are identified as one of the following waterbody types:

- **Freshwater Lake**
- **Freshwater Wetlands**
- **Freshwater Reservoir**

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Subsegment Length refers to the length (miles) of a river or stream waterbody, or waterbody subsegment, that has been defined for Section 305(b) reporting. Typically, an assessment for the entire waterbody or waterbody subsegment is based on results from one monitoring location. This convention likely overestimates the waterbody size (miles or acres) that actually either “fully support” beneficial uses or that are “impaired” for one or more uses. For example, certain assessments are based on results of biological monitoring conducted at a single high quality site within a stream reach of from 5 to 20 miles in length. For purposes of Section 305(b) reporting, results from this monitoring site are considered to apply (i.e., are extrapolated) to the entire waterbody segment, regardless of the changes in the quality of the habitat or aquatic communities in other portions of the segment. This problem is likely more significant for assessments of smaller streams where water quality and the quality of aquatic habitats changes more frequently than in larger streams and rivers. The extrapolation of assessment results within a waterbody segment is an inherent part of the Section 305(b) assessment and reporting process. DNR will continue to refine the boundaries of waterbody segments to avoid, as much as possible, excessive extrapolation of assessment results.

Lake Size refers to the surface acreage of each lake, wetland, or flood control reservoir assessed for the report. All assessments of Iowa’s publicly-owned lakes, wetlands, and flood control reservoirs are considered to include the entire surface area of the lake, wetland, or reservoir waterbody.

Significant Publicly Owned Lake? Iowa has 115 Iowa lakes that are designated as “Significant Publicly-Owned Lakes.” These lakes are greater than 10 acres in surface area, support fish stocks of at least 200 pounds per acre, and have a watershed-to-surface area ratio of less than 200:1. Significant publicly-owned lakes are the priority lakes in Iowa for restoration and improvement under the U.S. EPA Clean Lakes Program. Appendix C of *Water Quality in Iowa during 1998 and 1999* (DNR 2001) contains a listing of the 115 significant publicly-owned lakes in Iowa.

**Water Quality in Iowa During 1998 and 1999
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Assessment Comments provide a brief summary of the basis for the most recent (e.g., 1998-1999) assessment.

Summary of the degree to which this waterbody supports its beneficial uses: U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997, Wayland 1999) require that states, based on the available information on water quality, assign all assessed waterbodies to one of the following use support categories:

1. **“Fully”**: Waters that fully support beneficial uses have healthy aquatic communities and have slight or no water quality impacts to other beneficial uses due to either point source or nonpoint source pollution. Violations of state water quality criteria are rare.
2. **“Threatened”**: Waters that are fully supported/threatened fully support their beneficial uses but may not fully support these uses in the future because of anticipated sources of pollution or adverse pollution trends. This category applies to those waterbodies that have, or are suspected to have, actively declining water quality. Although DNR uses this interpretation of “fully supported/threatened” for development of the Iowa Section 303(d) list of impaired waterbodies, DNR also uses this category to include those waterbodies that have good water quality and support all of their designated uses but that have minor impacts to these designated uses. In general, these minor impacts have resulted from historical alterations to the waterbody or to the watershed in which the waterbody occurs; no downward trend is apparent in these waterbodies.
3. **“Partial”**: Waters that partially support beneficial uses have aquatic communities and/or water quality that are moderately impaired by point and/or nonpoint source pollution. The waterbody often continues to support its beneficial uses, but violations of state water quality criteria occasionally occur. DNR does not consider an assessment of “partially supporting” as indicating that a waterbody is “too polluted to support basic uses.” Rather, the “partially supporting” category refers to surface waters with man-made modifications of water quality or aquatic

**Water Quality in Iowa During 1998 and 1999
Assessment Results: Introduction**

habitat that result in some modification of the expected biological communities (especially fish and aquatic macroinvertebrates), unacceptable levels of sediment or nutrients delivered to the waterbody, and/or occasional violations of state water quality criteria.

4. **“Not Supporting”**: Waters not supporting designated uses have aquatic communities and water quality that are severely impacted by point and/or nonpoint source pollution. Violations of state water quality criteria are relatively frequent. At least one designated use is severely impaired.

5. **“Not Assessed”**: Often, sufficient water quality information is not available to assess all the classified beneficial uses for each waterbody. For example, sufficient water quality information may be available to assess the designated aquatic life uses but not the designated drinking water uses. Thus, the drinking water uses for this waterbody would be reported as “not assessed.”

Basis for assessment and comments: A brief account of the basis for the assessment is given. Information on causes and sources of impairment is included for selected waterbodies. When available, similar information from previous Section 305(b) reporting cycles is also included. Other comments on water quality conditions are provided as appropriate. Please note that these accounts were prepared for use by DNR staff to document and track Section 305(b) waterbody assessments. Thus, these accounts contain numerous abbreviations and occasional technical terms that may not be familiar to the reader. Regardless, DNR feels that these written descriptions of the assessments are useful for gaining a better understanding of how decisions were made regarding levels of use support.

For additional information on the assessment methodologies used to determine the level of support of beneficial uses for Iowa waterbodies, see the U.S. EPA’s guidelines for Section 305(b) reporting (U.S. EPA 1997, Wayland 1999) as well as the “Assessment Methods”

**Water Quality in Iowa During 1998 and 1999
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sections of the following chapters of Part III (Surface Water Assessment) of *Water Quality in Iowa During 1998 and 1999 (DNR 2001)*:

- Chapter 2: Assessment Methodology and Summary Data;
- Chapter 3: Rivers and Streams Water Quality Assessment;
- Chapter 4: Lakes Water Quality Assessment;
- Chapter 5: Flood Control Reservoirs;
- Chapter 6: Wetlands Assessment.

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Water Quality in Iowa During 1998 and 1999: Assessment Results

1

Rivers and Streams: Northeast Iowa River Basins

Maquoketa River Subbasin

ROCK CR/SHRICKER SLOUGH

-- mouth-Clinton to headwaters

Waterbody ID No.: IA 01-MAQ-0010

Subsegment No.: 0

Subsegment Description: mouth to trib S23,T81N,R5E in Clinton County.

Subsegment Length: 9.1 miles

ASSESSMENT COMMENTS: 1991 SUAs: habscrs/fshscrs=>22/10, 18/9 (both seine). Monitoring upstream and downstream from PCS Nitrogen Co. by LTRMP staff.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Stream assess. forms indicate below-average quality habitat. Frequent channel alterations associated with channelization and clearing of riparian veg. observed. Odor and color of wastewater observed; most evident in lower reaches. Relatively diverse fish community observed.

For 1996 report: Used assessment prepared for the 1994 report. In May 1996, Scott Gritters (DNR/LTRMP) informed DNR/EPD about nutrient enrichment of a backwater lake of the Mississippi R. (Shricker Slough) that he believes is due to Rock Creek. He feels that industries along Rock Creek are contributing these high levels of nutrients that lead to algae blooms and winterkills in Shricker Slough. Thus, attribute impairment (although based primarily on circumstantial evidence) to high nutrient levels from industrial and agricultural sources. Recent sampling conducted by Gritters and Gould (DNR, LTRMP, Bellevue) show significantly high levels of nitrite-nitrate (NOX) and ammonia. Average NOX upstream from industries was 6.83 mg/l; dstr=11.27 mg/l. Ammonia averaged 0.06 mg/l upstream and 1.78 mg/l downstream. Compared to other tributaries sampled for LTRMP, Rock Creek has considerably higher NOX and ammonia.

For the 1998 report, continued monitoring by Gritters and Gould (DNR, LTRMP, Bellevue) strongly suggests that a local industry is the source of much of the high levels on nitrate and ammonia in the middle and lower reaches of Rock Creek, including Shricker Slough. DNR Water Quality, Land Quality, and Field Office 6 met with industry representatives in June 1998 and discussed alternatives to reduce nitrogen levels in Rock Cr. and Shricker Slough. Industry will begin implementation of corrective measures and monitoring of surface and groundwater in the near future and report back to DNR in one year on progress. Due to results of continued upstream/downstream monitoring by LTRMP/Bellevue staff that show excessively high levels of nitrogen in Rock Creek and excessively high levels of chlorophyll-a in Shricker Slough, continue to assess Rock Creek as partially supporting its Class B(LR) aquatic life uses. A review of the field sheets from the October 1991 DNR stream use assessments supports the assessment of the Class B(LR) aquatic life uses as PS. That is, results of the stream use assessment near Low Moor show the presence of less than a majority of the expected fish taxa (4 of 9) for streams in the Southern Iowa Rolling Loess Prairies subecoregion and show a relatively low fish community diversity of 8 cyprinid species. Fish community diversity (11 species from 3 families) is somewhat better at the second SUA site SW (upstream) from Quantum Chemical but is below that suggested by the above average habitat quality. However, an August 1997 DNR Fisheries survey 2 mi E of Low Moor suggests full support of the Class B(LR) uses (i.e., 10 spp; 3 fams, with 6 of 9 expected fish taxa present).

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "partially supported." EXPLANATION: The assessment of support of the Class B(LR) uses remains based on high levels of ammonia in Rock Creek contributed by contaminated groundwater at the PCS Nitrogen facility. Staff of the Upper Mississippi River "Long Term Resource Monitoring Program" at Bellevue, Iowa, continue to monitor the water quality of Rock Creek (two sites) and Shricker Slough (one site) every two weeks. Results of this monitoring show general poor water quality at the lower Rock Creek (Highway 67) station. Of the 93 samples collected by LTRMP staff between June 1996 and December 1999, levels of ammonia-nitrogen in 8 samples (8.6%) exceeded Class B(LR) chronic criteria; no samples exceed Class B(LR) acute criteria for ammonia-nitrogen. The highest three readings for ammonia nitrogen during the three-year period (6.7, 5.9, and 5.8 mg/l) did not approach the temperature/pH-dependent acute criteria of 22.2, 36.1, and 45.0 mg/l, respectively. Seven of 93 samples (7.5%) exceeded the Class B(LR) criterion for dissolved oxygen (5.0 mg/l), with violations ranging from 2.1 to 4.7 mg/l. One of 88 samples violated the Class B(LR) criterion for pH (the sample collected on December 16, 1996 had a pH of 6.0 units). According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), if chronic criteria for a toxic pollutant (for example, ammonia) are exceeded in more than one sample, but in < 10% of the samples collected within a three-year period, the aquatic life uses are "partially supported." Thus, because ammonia criteria were exceeded in 8.6% of the samples from lower Rock Creek, the support of the Class B(LR) uses of this stream reach was assessed as "partially supported." According to these EPA guidelines (U.S. EPA 1997b, page 3-17), however, the percentages of violations of the dissolved oxygen criterion at this station (7.5%) and pH (1.1%) do not suggest a water quality impairment (these guidelines allow up to 10% violations for conventional parameters such as pH, dissolved oxygen, and temperature before impairment of water quality is indicated). Water quality at the upper Rock Creek station was generally good, with none of the 93 samples collected violating criteria for either dissolved oxygen, pH, or ammonia nitrogen. Several attempts at correcting the problem of high levels of ammonia and other nitrogen compounds in Rock Creek were made during the 1998-1999 biennial period. Beginning in 1999, hybrid poplar trees were planted along the unnamed tributary of Rock Creek (aka Ammonia Creek) that flows through the PCS property and that delivers high levels of ammonia to Rock Creek. These trees have dense root masses that penetrate deep into the soil profile; research has demonstrated the ability of these trees to remove nitrogen compounds from contaminated groundwater (see Gatliff 1994). A containment trench with a sump system was constructed by PCS Nitrogen to collect and remove the top ten feet of ammonia-rich groundwater feeding Ammonia Creek; this system began operation in April 1999. PCS also plans to convert approximately 120 acres of cropland to native prairie plantings. Through the cooperative efforts of DNR, a private landowner, and PCS Nitrogen, an 80-acre wetland was created in early 2000 through the impoundment of Rock Creek downstream from PCS. This wetland is expected to help process and assimilate high levels of nitrogen compounds leaving the PCS facility and improve the water quality in lower Rock Creek and in Shrickers Slough. In September 1999, PCS Nitrogen announced the closure of its Clinton plant. After closure, the plant was to be dismantled; the site will no longer be used for the storage or production of products produced by PCS Nitrogen. PCS Nitrogen agreed to continue its activities to recover and remove/treat nitrogen compounds (for example, planting of hybrid poplar trees, conversion of cropland to prairie, and construction/operation of a groundwater recovery system); PCS will continue to monitor

Rivers and Streams: Northeast Iowa River Basins

Maquoketa River Subbasin

groundwater at the PCS site. PCS also assisted with the development of the 80-acre wetland constructed on lower Rock Creek. Surveys of fish and macroinvertebrates were conducted in September 1999 by the DNR Fisheries Bureau to document pre-remediation conditions (see Gritters 1999). Fish sampling locations included (1) the vicinity of the Highway 67 bridge (LTRMP downstream water quality site), (2) upstream and downstream from Ammonia Creek, (3) in Ammonia Creek, and (4) an upstream site above County Road Z-40 (LTRMP upstream water quality site). Results from the sites and Highway 67 and County Road Z-40 were compared to an August 1997 survey also by the DNR Fisheries Bureau. Despite the documented water quality problems, results of the September 1999 fish survey showed a relatively healthy and diverse fish community in Rock Creek, even in the reach with high levels of ammonia downstream from the confluence with Ammonia Creek. The aquatic community in Ammonia Creek, however, was limited to a few tolerant species. These results indicate the need to include both chemical as well as biological monitoring when assessing stream quality. Although sampling for macroinvertebrates was limited, results showed both pollution tolerant and sensitive species at all sample sites except Ammonia Creek.

ELK R

-- mouth to headwaters

Waterbody ID No.: IA 01-MAQ-0030

Subsegment No.: 1

Subsegment Description: mouth to North Branch Elk River

Subsegment Length: 18 miles

ASSESSMENT COMMENTS: Water quality monitoring conducted by LTRMP office, Bellevue, IA. DNR biocriteria sampling in 1999.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
 Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream was assessed at one location in B(WW) segment. Habitat quality is below average for B(WW) classification based on poor low flow habitat characteristics. Frequent pasture impacts noted. Fair diversity of fish observed, mostly cyprinid species (8 species from 2 families).

For 1996 report, used different criteria to evaluate stream use assessment data: habitat score > 22 and fish score > 10 (with seine) = FST; i.e., these values exceed the median scores for stream use assessments made between 1990 and 1992. In addition, I conducted fish survey in lower (B(WW)) reach in late 1980s and was impressed by predominance of coarse substrates and exceptionally diverse fish community (19 spp.).

For 1998 report, used information in an April 2, 1998 memo from S. Gritters (LTRMP, Bellevue) regarding high levels of ammonia in Elk River following runoff and regarding a possible decline in number of species present in the stream as reflected in surveys conducted in 1987, 1992 and 1997. Dead fish and other aquatic life were observed during the August 1997 surveys conducted by DNR Fisheries. Additional monitoring is needed to determine the nature, causes, and sources of ongoing impairments to the aquatic life of this stream.

For the 2000 report: SUMMARY: Continue to assess support of the Class B(WW) aquatic life uses as "partially supported." Fish consumption uses remained "not assessed." EXPLANATION: The assessment of the Class B(WW) uses remains based primarily on results of DNR/LTRMP and DNR Fisheries Bureau sampling of Elk River fish populations that suggest impairment to the aquatic communities of this stream. Preliminary results of a DNR biological assessment in 1999 near Teeds Grove showed relatively few species and numbers per species, thus suggesting a continuing impairment to the aquatic life uses of this stream reach. In addition to biological monitoring, the DNR/LTRMP staff at Bellevue supplied water quality data for 52 samples collected from Elk River during the period September 1997 through September 1999. Samples were collected at least twice per month during this period; the parameters analyzed included dissolved oxygen, pH, ammonia-nitrogen, total phosphorus, total nitrogen, total suspended solids, and chlorophyll. A summary of these data show no violations of the Class B(WW) water quality criteria for temperature, pH, or ammonia-nitrogen. One of the 52 samples violated the Class B(WW) water quality criterion for dissolved oxygen (5.0 mg/l); the sample collected on January 11, 1999 contained 4.1 mg/l of dissolved oxygen. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), however, the percentage of violations of the dissolved oxygen criterion at this station (2%) does not suggest a water quality impairment (these guidelines allow up to 10% violations for conventional parameters such as pH, dissolved oxygen, and temperature before impairment of water quality is indicated). Average levels of total phosphorus were moderately high for Iowa streams (mean = 0.19 mg/l; SE = 0.05 mg/l; median 0.12; 75th percentile = 0.16) but do not suggest serious water quality problems. Five samples, however, exceeded 0.5 mg/l total phosphorus (maximum of 1.99 mg/l); these high levels were primarily associated with rainfall runoff events. Fish consumption uses remain "not assessed" due to the lack of monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Maquoketa River Subbasin

MAQUOKETA R

-- mo-Jackson-> N Fk Maquoketa R

Waterbody ID No.: IA 01-MAQ-0050

Subsegment No.: 2

Subsegment Description: Deep Cr to N Fk Maquoketa R Jackson Co.

Subsegment Length: 30 miles

ASSESSMENT COMMENTS: Professional judgement of DNR Fisheries staff, Bellevue, Iowa. Fish tissue monitoring NE of Maquoketa in 1999.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used professional judgement of DNR fisheries biologists in NE Iowa that feel that the Maquoketa River has abnormally high levels of suspended sediments and nutrients. Meeting was held in May 1996 to obtain input from several agencies on the magnitude and sources of this problem. A paper is to be prepared on this problem. Composite sample of whole- fish carp from Maquoketa River NE of Maquoketa showed that all contaminants were less than 1/2 of FDA action levels (=FS of fish consumption uses).

For the 1998 report, assesse support of the Class B(WW) aquatic life uses as FST due to relatively high levels of suspended solids & nutrients that threaten support of Class B(WW) uses. The Class B(WW) use, however, is likely supported: the March/ April 1998 Iowa Conservationist notes that this reach of the Maquoketa provides good angling opportunity for catfish and smallmouth bass. No information available for assessing support of the Class A primary contact recreation uses. Additional monitoring is needed to determine whether the relatively high levels of suspended solids and nutrients in the lower Maquoketa River are impairing the Class B(WW) aquatic life uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(WW) aquatic life uses are considered "not assessed." Fish consumption uses remain "fully supported." EXPLANATION: Assessments of support of the Class A and Class B(WW) uses were not developed due to the lack of water quality monitoring data for this river reach. Fish consumption uses remain assessed as "fully supported" based on the 1999 EPA/DNR fish tissue (RAFT) sampling on the Maquoketa River northeast of Maquoketa that showed levels of all contaminants in the two composite samples of whole-fish carp were less than 1/2 of the respective FDA action levels and DNR levels of concern.

Rivers and Streams: Northeast Iowa River Basins

Maquoketa River Subbasin

MAQUOKETA R

-- N Fk Maquoketa to Quaker Dam

Waterbody ID No.: IA 01-MAQ-0060

Subsegment No.: 1

Subsegment Description: N Fk Maq.->Farm Cr S10,T85N,R1W Jones Co

Subsegment Length: 87 miles

ASSESSMENT COMMENTS: DNR quarterly monitoring station at Hwy 61 bridge NW of Maquoketa; last monitored FY 1992-93. RAFT (fish tissue) site NE of Maquoketa in 1995, 97, and 99..

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed with WQ monitoring data for the 1992 report.

For the 1994 report, had no violations of WQC for Class B; thus assess as FST due to known threats from ag. NPS. Of the 6 samples analyzed for fecal coliforms, 4 were collected at approx. average flows; 3 of these samples had levels of fecals > Class A WQC; due to lack of complete data, use BPJ to assess as PS. Not sure of source of these rel. high levels of fecals; thus, used traditional sources of agricultural NPS and municipal WWT.

For 1996 assessment, used data from DNR quarterly WQ monitoring station to assess AL uses. Used RAFT data from 1995 to assess fish consumption use as FS (all contaminants < 1/2 FDA action levels).

For the 1998 report, used results of DNR quarterly monitoring NW of Maquoketa in FY92-93 to assess support of Class A (primary contact) uses as PS, Class B(WW) aquatic life uses as FST, and results of fish contaminant (RAFT) monitoring in 1995 to assess fish consumption uses as FS.* Other monitoring, however, has been conducted in the Maquoketa River watershed as part of assessments of sediment/nutrient delivery to Pool 13 of the Mississippi River. Runoff sampling was conducted in May and July 1996 by DNR/LTRMP (Bellevue) staff at 24 sites along the Maquoketa River and its major tributaries. Although useful for identifying subwatersheds of the Maquoketa basin that contribute excessive levels of sediment and nutrients to the Mississippi River, this monitoring was not directed at assessing the status of aquatic life in these watersheds. Thus, until additional monitoring in the Maquoketa River above the North Fork shows impairments to the Class B(WW) uses from the relatively high levels of suspended sediment and nutrients, continue to assess support of the Class B(WW) uses as FST. Additional monitoring is needed to determine sources of violations of the Class A primary contact recreation water quality criterion.

*Results from the 1997 RAFT fish contaminant monitoring program were received in August 1998. Continue to assess support of the fish consumption uses as FS due to levels of all contaminants in the composite sample of whole-fish carp collected from the RAFT trend station NE of Maquoketa less than 1/2 of respective FDA action levels.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses and the Class B(WW) aquatic life uses are considered "not assessed." Fish consumption uses remain "fully supported."

EXPLANATION: The previous assessments of support of the Class A and Class B(WW) uses were based on data from the DNR quarterly water quality monitoring station at Maquoketa. This station, however, was last monitored during the 1992-1993 biennial period, and these data are now considered too old (greater than five years) to be useful for developing water quality assessments of current conditions. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Maquoketa station began in October 1999. Results from this monitoring will allow development of an updated assessment of support of the beneficial uses for the 2002 report. Fish consumption uses remain assessed as "fully supported" based on the 1999 EPA/DNR fish tissue (RAFT) sampling on the Maquoketa River northeast of Maquoketa that showed levels of all contaminants in two composite samples of whole-fish carp were less than 1/2 of the respective FDA action levels and DNR levels of concern.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Northeast Iowa River Basins

Maquoketa River Subbasin

HAINER CR

-- mouth-Jackson to headwaters

Waterbody ID No.: IA 01-MAQ-0125

Subsegment No.: 0

Subsegment Description: mouth to trib S22,T84N,R3E Jackson Co.

Subsegment Length: 0.7 miles

ASSESSMENT COMMENTS: September 1994 DNR stream use assessment.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1994 DNR stream use assessment east of Maquoketa to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (23) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of diverse substrates, several pool/riffle sequences, and moderately stable stream banks, and (3) very diverse fish community (15 species from 4 families) including some relatively pollution-intolerant forms (rosyface shiner, northern hogsucker, and hornyhead chub). Field sheet suggests that continued support of the aquatic life uses is threatened by frequent impacts due to pasturing of the riparian zone.

For the 1998 report, used a review of the field sheet from the September 1994 DNR stream use assessment in Jackson County to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a relatively diverse fish community (15 species from 4 families) for streams in the Southern Iowa Rolling Loess Prairies subecoregion (47f), (2) presence of a majority of the expected fish taxa (6 of 9) for streams in this subregion, and (3) indications of above average habitat quality due to presence of diverse substrates and several pool/riffle sequences. Frequent pasturing of the riparian zone was identified as the most significant impact to the physical characteristics of this stream reach. Notes on field sheet indicate that seining was difficult due to snags and rocks; thus, additional monitoring is needed to better determine the status of the aquatic communities of this stream.

For the 2000 report: **SUMMARY:** The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." **EXPLANATION:** The assessment of support of the Class B(LR) uses remains based on the September 1994 DNR stream use assessment (see assessment for the 1998 report above).

Rivers and Streams: Northeast Iowa River Basins

Maquoketa River Subbasin

PRAIRIE CR

-- mouth-Jackson to headwaters

Waterbody ID No.: IA 01-MAQ-0130

Subsegment No.: 0

Subsegment Description: mouth to trib S2,T83N,R2E Jackson Co.

Subsegment Length: 8.1 miles

ASSESSMENT COMMENTS: Fish kills.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates slightly below average habitat. Isolated pasture impacts noted. Poor low flow habitat characteristics noted. Rel. low diversity of fish observed, all cyprinid species.

For 1996 report, made assessment consistent with guidelines that use habitat scores of ≥ 22 and fish scores of ≥ 10 (seining) as indicating FST. Thus, changes assessment of aquatic life uses from PS to FST.

For 1998 report, used occurrence of two fish kills in summer 1997 to assess support of aquatic life uses as PS. Kills occurred on August 20 and September 18, 1997. No cause or source was identified for the August kill; the cause of the second kill was determined to be discharge of hog manure from an open feedlot. An estimated 93,000 fish were killed. Stream was also monitored as part of assessment of sediment/nutrient contributions of watershed in the Maquoketa River basin; monitoring was conducted by DNR/LTRMP staff from Bellevue. The Prairie Creek watershed was identified as one of the six subwatersheds that contribute the highest levels of suspended solids and nutrients to the Maquoketa River and to Pool 13 of the Mississippi River. Thus, the assessment of the Class B(LR) aquatic life uses as PS is appropriate. Under the guidance of the Maquoketa River Alliance, several groups (e.g., NRCS and county extension) are working to address problems with nonpoint source contributions of suspended solids and nutrients (phosphorus). Additional monitoring is needed to determine whether the relatively high levels of suspended solids and nutrients identified through DNR/LTRMP monitoring are impairing the Class B(LR) aquatic life uses of this stream. A review of the field sheet from the September 1991 DNR stream use assessment shows (1) relatively poor fish community diversity (6 cyprinid species) for streams in the Southern Iowa Rolling Loess Prairies subcoregion (47f) and (2) less than a majority of the expected fish taxa (4 of 9) for streams in this subregion. Habitat quality is approximately average for this area, with diverse substrates and a few pool/riffle sequences (i.e., habitat quality is easily sufficient to allow full support of the Class B(LR) uses). As noted above, additional monitoring is needed to (1) update this assessment, (2) determine the status of the aquatic communities, especially with regard to the fish kills in 1997, and (3) determine the significance of the high levels of suspended solids and nutrients identified through LTRMP runoff monitoring in 1996.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: The assessment of the Class B(LR) uses is based on repeated fish kills as described in the assessment developed for the 1998 report (above). No additional fish kills were reported during the 1998-1999 biennial period.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Maquoketa River Subbasin

BEAR CR

-- mouth-Jackson to headwaters

Waterbody ID No.: IA 01-MAQ-0140

Subsegment No.: 2

Subsegment Description: Beers Cr to trib S28,T84N,R2W Jones Co.

Subsegment Length: 29 miles

ASSESSMENT COMMENTS: May 1991 SUA: habscr/fshscr=23/10 (shock). 1997 Biocriteria: Fish IBI= 55(good), BM-IBI= 58(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates fair habitat quality. Some substr. diversity and several pool/riffle sequences associated with woody debris observed. Frequent old channelization impacts and stream bank erosion also noted. Fair diversity of fish observed. Aquatic life uses assessed as PS due to relatively low fish score.

For 1996 report, changed assessment to FST due to above average habitat score and below average fish score due to poor sampling conditions due to high stream flow.

For 1998 report, used results of the September 1997 DNR biocriteria sampling approximately 2 miles SW of Baldwin to update the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST). Used results of the biocriteria sampling to upgrade the assessment of support of the Class B(LR) uses from FST to FS due to (1) presence of a very diverse fish community (21 species from 5 families) for the portion of the Southern Iowa Rolling Loess Prairies subecoregion in the Mississippi River drainage, (2) presence of all (9 of 9) the expected fish taxa for streams in the subecoregion, and (3) lack of violatins of Class B(LR) WQ criteria in the sample collected during biocriteria sampling. Thus, despite threats from old channelization and streambank erosion noted in the assessment developed for the 1994 report, the composition of the fish community indicates that the aquatic life uses for this stream are fully supported.

For the 2000 report, the assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

Little Bear Cr.

-- mouth (S30, T84N, R1W, Jones Co.) to headwaters.

Waterbody ID No.: IA 01-MAQ-0142

Subsegment No.: 0

Subsegment Description: mouth (S30, T84N, R1W, Jones Co.) to headwaters

Subsegment Length: 5 miles

ASSESSMENT COMMENTS: Fish kill atr Wyoming, August 7, 1998.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Aquatic Life Support -- Partial Overall Use Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports due to lack of water quality information.

For the 2000 report: SUMMARY: The general aquatic life uses of this stream were assessed as "partially supported." EXPLANATION: A fish kill occurred in this stream reach on August 7, 1998, at the Wyoming golf course in Jones County. Twelve fish were reported killed (a fish kill was also reported for Little Bear Creek at Wyoming on August 9, 1991; this kill followed a rainfall runoff event). No cause or source of the kill was identified; chemical water quality showed no problems. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill, or kill of unknown origin, within the most recent three-year period indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the general aquatic life uses of this stream were assessed as "partially supported."

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

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Maquoketa River Subbasin

MINERAL CR

-- mouth-Jackson to headwaters

Waterbody ID No.: IA 01-MAQ-0150

Subsegment No.: 0

Subsegment Description: mouth to trib S35,T85N,R2W Jones Co.

Subsegment Length: 21 miles

ASSESSMENT COMMENTS: Not assessed for the 2000 report.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess forms indicate above average habitat quality. Some diversity of substr. and several pool/riffle sequences observed. Fairly diverse fish community observed on two separate occasions.

For 1996 report, used assessment developed for the 1994 report.

For 1998 report, used the assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST). * These data, however, are more than five years old. Thus, according to Section 305(b) reporting guidelines, the assessment based on these data should be considered "evaluated." Monitoring near Canton for suspended solids and nutrients was conducted during runoff periods in May and July 1996 to identify subwatersheds in Maquoketa River basin that contribute the highest sediment/nutrient loads to the Maquoketa River. The Mineral Creek watershed was not identified as one of the six watersheds contributing the highest sediment/nutrient loads. No threats to continued support of the Class B(LR) aquatic life uses were identified during the May 1991 DNR stream use assessment. *A review of the field sheet from the May 1991 DNR stream use assessments shows (1) moderately diverse fish communities (species/families, dstr->upstr: 10/4; 9/2) for streams in the Southern Iowa Rolling Loess Prairies subcoregion (47f), (2) presence of a majority of the expected taxa (5 of 9 & 6 of 9) for streams in this subregion, and (3) indications of above average habitat quality due to presence of diverse substrates and numerous pool/riffle sequences and a well-meandered channel form. The data upon which this assessment is based are more than 5 years old. Additional monitoring is needed to update the assessment

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were considered "not assessed." EXPLANATION: The assessment of support of the Class B(LR) uses developed for the 1998 report (see above) was based primarily on results from DNR stream use assessments conducted in 1991. The results from these assessment are now considered too old (greater than five years) to be useful for developing water quality assessments of current conditions. Thus, the assessment of support of the Class B(LR) aquatic life uses was changed from "fully supported / threatened" to "not assessed."

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Northeast Iowa River Basins

Maquoketa River Subbasin

BUCK CR

-- mouth-Delaware to headwaters

Waterbody ID No.: IA 01-MAQ-0210

Subsegment No.: 0

Subsegment Description: mouth-> Golden Br S11,T87N,R5W Delaware

Subsegment Length: 10 miles

ASSESSMENT COMMENTS: Fish kill on July 20, 1998.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates avg. habitat quality. Very diverse substr. and numerous pool/riffle sequences were observed. Frequent pasture use impacts and stream bank erosion also noted. Natural riparian veg. removed. Rel. low diversity of fish observed, but seining was hindered by abundant coarse substrates.

For 1996 report, changed assessment from PS (in 1994) to FST due to diversity of substrates, frequent pool/riffle sequences, and poor seining efficiency due to coarse substrates. Stream apparently threatened by pasturing but habitat quality suggests that stream is not impaired.

For the 1998 report, used the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (FST). Additional monitoring is needed to update and better determine the status of habitat and the aquatic communities. Because data are > five years old, the 305(b) assessment category was changed to "evaluated." A review of the field sheet from the September 1991 DNR stream use assessment in Delaware County shows very low fish community diversity (4 species from 2 families) for streams in the Iowan Surface subcoregion (47c) and presence of only 3 of the expected 11 fish taxa for streams in the subregion. Although these results suggest an impairment, continue to use the FST assessment due to notes on field sheet regarding rocky substrates and difficulty seining.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "partially supported." EXPLANATION: The assessment of support of the Class B(LR) uses developed for the previous (1998) report ("fully supported / threatened"; see above) was based primarily on results from a DNR stream use assessment conducted in 1991. The results from this assessment are now considered too old (greater than five years) to be useful for developing water quality assessments of current conditions. A fish kill occurred on an unnamed tributary to Buck Creek near Ryan in Delaware County on July 20, 1998. The kill proceeded down the unnamed tributary for approximately four miles into the upper reaches of the Class B(LR) portion of this stream. The kill was attributed to runoff of animal waste from a dairy operation; an estimated 92,400 fish were killed. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the assessment of support of the Class B(LR) aquatic life uses was assessed as "partially supported" due to this fish kill.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

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Maquoketa River Subbasin

PLUM CR

-- mouth-Delaware to headwaters

Waterbody ID No.: IA 01-MAQ-0220

Subsegment No.: 1

Subsegment Description: mouth to trib S24,T89N,R4W Delaware Co.

Subsegment Length: 24 miles

ASSESSMENT COMMENTS: Monitored by DNR/LTRMP during runoff events in May & July 96. 1997 biocriteria: fish 25 spp., 6 fams.; Fish IBI= 58(good), BM-IBI= 65(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1994 or 1996 reports.

For the 1998 report, DNR/LTRMP runoff sampling was conducted in May and July 1996 to identify watersheds that contribute NPS. Study results indicate that the Plum Creek watershed contributes relatively high amounts of suspended solids and nutrients (phosphorus) to the Maquoketa River. Under guidance of the Maquoketa River Alliance, several groups (e.g., NRCS and county extension) are working to address problems with nonpoint source contributions of suspended solids and nutrients. Additional monitoring is needed to determine whether these relatively high levels of suspended sediment and nutrients are impairing the Class B(WW) aquatic life uses of this stream. Additional monitoring was conducted in September 1997 approx. 2.5 miles N of Hopkington as part of the DNR biocriteria development project. Results of biocriteria sampling were used to assess support of the Class B(WW) uses as FS due to (1) presence of a very diverse fish community (25 species from 6 families) for streams of the Iowan Surface subecoregion, including sensitive species such as the Iowa darter and banded darter, (2) presence of all (11 of 11) expected fish taxa for streams in this subecoregion, (3) presence of the expected game fish species (smallmouth bass), and (4) lack of violations of Class B(WW) WQ criteria in the sampled collected during biocriteria sampling. Thus, despite the relatively high amounts of suspended solids and nutrients carried by this stream during runoff events, the composition of the fish community indicates that the aquatic life uses designated for this stream are fully supported.

For the 2000 report, the assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Maquoketa River Subbasin

SPRING BRANCH

-- mouth-Delaware-> spring source

Waterbody ID No.: IA 01-MAQ-0230

Subsegment No.: 0

Subsegment Description: mo-> spring source S35,T89N,R5W Delaware Co.

Subsegment Length: 2.8 miles

ASSESSMENT COMMENTS: Assessment is based on a 1999 summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information from March/April Iowa Conservationist: "Habitat improvements completed on 900 feet of stream in 1995. 14-inch limit on brown, rainbow, and brook trout. Excellent insect hatches."

For the 1998 report, used assessment of support of the Class B(CW) aquatic life uses developed for the 1996 report (=FST). In addition the March/April 1998 Iowa Conservationist notes that this stream has "lots of improved habitat with additional areas completed in 1997." Thus, continue to assess support of aquatic life uses as FST. No threats apparent. Additional monitoring is needed to better determine the status of the habitat and aquatic communities of this stream. The Spring Branch Creek Water Quality Project, coordinated by the Delaware Soil & Water Conservation District, is designed to reduce sedimentation and nutrient loading to water resources in the watershed of Spring Branch Creek. This project is intended educate landowners on water quality issues and to assist them with implementation of nonpoint source control measures such as conservation tillage, contour stripcropping, grassed waterways, and sediment & water control structures. For more information on this project, contact the Delaware County Soil & Water Conservation District at 319/927-4590.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses remain assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed."
EXPLANATION: Based on the assessment developed for the 1998 report (above), and based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses remain assessed as "fully supported / threatened." According to Moeller (1999), Spring Branch is in the category of Iowa trout streams with at least some level of documented trout reproduction but of unknown frequency; these streams are not generally capable of maintaining a viable trout population at this time. Fish consumption uses remain "not assessed" due to lack of fish tissue monitoring in this stream reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Maquoketa River Subbasin

FENCHEL CR

-- mouth-Delaware to headwaters

Waterbody ID No.: IA 01-MAQ-0280

Subsegment No.: 0

Subsegment Description: mo->Richmond Springs S4,T90N,R6W Delawar

Subsegment Length: 1.2 miles

ASSESSMENT COMMENTS: Assessment based on summary of trout reproduction (1999).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information on Fenchel Cr. from the 1996 Fishing Forecast in the March/April 1996 Iowa Conservationist: "Lower portion stocked with rainbows from April through November. Entire stream has reproducing brown trout population." Presence of reproducing trout strongly suggests excellent habitat and water quality.

For the 1998 report, continued to use the assessment of support of the Class B(CW) aquatic life uses developed for the 1996 report (=FST).

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported." According to Moeller (1999), Fenchel Creek (aka, Richmond Springs) is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of trout without stocking. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Mississippi River and Direct Tributaries

MISSISSIPPI R.

-- Iowa R. to L&D 13 at Clinton

Waterbody ID No.: IA 01-NEM-0010

Subsegment No.: 1

Subsegment Description: Iowa R. to L&D 15 at Davenport

Subsegment Length: 89 miles

ASSESSMENT COMMENTS: Fish tissue monitoring conducted at Muscatine site for 1995 RAFT program; Linwood site sampled in 1994, 96 & 98.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Threatened	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of fish tissue monitoring conducted dstr from Muscatine for the 1995 RAFT program to assess fish consumption uses as FS due to levels of all contaminants in samples of bottom feeding fish (carp filets) and predator fish (white bass filets) less than 1/2 FDA action levels and less than DNR levels of concern. Also used results of RAFT trend monitoring dstr from Linwood: levels of all contaminants in the sample of whole-fish carp were less than 1/2 FDA action levels and DNR levels of concern. The 1/4/95 list of CSOs indicates Muscatine has 6 CSO discharges that are likely contributing sources of pathogens, BOD and nutrient enrichment in the Mississippi River near Muscatine. No monitoring data are available to assess the impact of CSOs.

For the 1998 report, used assessment of the fish consumption uses developed for the 1996 report (=FS). RAFT trend sampling (whole fish, carp) at Linwood in 1994 and 1996 showed levels of all contaminants less than 1/2 of FDA action levels. No other information available for assessing support of either aquaic life or primary contact uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses and the Class B(WW) aquatic life uses remain "not assessed." Fish consumption uses were assessed as "fully supported / threatened." EXPLANATION: Results of EPA/DNR fish tissue (RAFT) monitoring on the Mississippi River near Linwood in 1998 showed that levels of all contaminants in two samples of whole-fish carp were below the respective FDA action levels. Both samples, however, contained 0.16 mg/kg of technical chlordane; this level is slightly above 1/2 of the FDA action level of 0.30 mg/kg. According to DNR's assessment methodology for Section 305(b) reporting, levels of fish contaminants greater than 1/2 of the respective FDA action level indicate that fish consumption uses should be assessed as "fully supported / threatened." In addition to this sampling, EPA/DNR fish tissue (RAFT) monitoring conducted downstream from Muscatine in 1995 (see above) and 1999 showed that levels of all contaminants in composite samples of filets from common carp, white bass, and black crappie are below 1/2 of the respective FDA action levels and DNR levels of concern.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Mississippi River and Direct Tributaries

MISSISSIPPI R

-- Iowa R. to L&D 13 at Clinton

Waterbody ID No.: IA 01-NEM-0010

Subsegment No.: 2

Subsegment Description: L&D 15 to L&D 14 (= Pool 15)

Subsegment Length: 89 miles

ASSESSMENT COMMENTS: Assessment based on fish contaminant monitoring.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Threatened	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Monitoring conducted for ALCOA in fall 1992 shows continued high levels of PCBs in bottom feeding fish; fish consumption advisory to remain. According to consent order w/ EPA, next sampling should be in 1994.

For 1996 report, monitoring conducted in fall 1994 continues to show levels of PCBs in carp and carsuckers from stations along the Iowa side of Pool 15 the exceed the FDA action level (i.e., the upper 95% CI exceeds the FDA action level). Thus, fish consumption advisory remains and the assessment of fish consumption uses = NS. Sediment study finalized in July 1996 shows PCB levels up to 7.4 mg/kg in subsurface sediments in a relatively narrow discontinuous band 50 to 150' wide along the Iowa shore adjacent to the ALCOA facility; no PCBs detected in surface water of Pool 15. No surface water WQ monitoring data for assessing support of the Class C (drinking water uses) for the city of Davenport.

For the 1998 report, continue to assess support of the fish consumption uses as NS due to existence of a fish consumption advisory on carp and carsuckers from the Iowa side of Pool 15. Monitoring in the fall of 1996 showed that upper 95% confidence limits for PCBs in channel catfish, carp, and river carsucker at the four sites monitored were all less than the FDA action level of 2.0 ppm; only mean and upper 95% CLs for carp at two sites exceeded 1/2 of the FDA action level (i.e., mean=1.03 and 95% CL=1.73 ppm at site 3; mean=1.18 and 95% CL=1.7 ppm at site 4). Thus, according to DNR methods for conducting 305(b) assessments of fish consumption uses, assess level of support as FST due to mean levels > 1/2 the FDA action level. Over the period of monitoring (1988 to 1996), levels of PCBs in fish from Pool 15 near the ALCOA facility have tended to decline, especially in 1996. Monitoring will again be conducted in fall 1998 to confirm that levels of PCBs in Pool 15 fish are well below the FDA action level.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses and the Class B(WW) aquatic life uses are considered "not assessed." Fish consumption uses are assessed as "fully supported / threatened." EXPLANATION: Assessments of support of the Class A and Class B(WW) uses were not developed due to the lack of water quality monitoring data for this river reach. Fish consumption uses were upgraded from "not supporting" to "fully supported / threatened" due to lifting of the 10-year old fish consumption advisory in August 2000. This advisory was lifted after results of ALCOA-sponsored fish tissue monitoring in 1996 and 1998 showed that the average levels and upper 95% confidence limits of total PCBs (sum of Aroclors 1248, 1254, and 1260) in target species (common carp and river carsucker) at all four sample sites in Pool 15 were below the FDA action level of 2.0 ppm (see URS Griener Woodward Clyde 2000a, 2000b). The decline in levels of PCBs in Pool 15 fish was attributed primarily to clean-up activities at the ALCOA plant but also likely reflects natural attenuation of PCBs as well as the potential influence of major flood events in the early 1990s on the Upper Mississippi River. Levels of PCBs remaining in Pool 15 fish are believed near background levels for this reach of the river. The assessment as "threatened" is due to the occurrence of average levels of total PCBs slightly above 1/2 of the FDA action level for common carp at two sites in 1996. According to DNR's Section 305(b) methodology, levels of fish contaminants above 1/2 the respective FDA action levels suggest a "threat" to the full support of the fish consumption use. The 1998 sampling showed that average levels of total PCBs plus the upper 95% confidence limits were below 1/2 of the FDA action level for both target species at all four sites.

Rivers and Streams: Northeast Iowa River Basins

*Mississippi River and Direct Tributaries***MISSISSIPPI R**

-- Iowa R. to L&D 13 at Clinton

Waterbody ID No.: IA 01-NEM-0010

Subsegment No.: 4

Subsegment Description: Wapsipinicon R. to L&D 13 at Clinton

Subsegment Length: 89 miles

ASSESSMENT COMMENTS: Assessments based on USGS monitoring station at Clinton, special studies of slime growth in Beaver Slough, and fish tissue monitoring near Camanche.**SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:**

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had no violation of WQS including 7 samples with FCB all less than Class A WQ criterion.

For 1994 report, had 1 of the 5 samples collected between Oct 91 and July 92 with DO of 4.5, thus violating the Class B(WW) WQC. Data do not meet completeness criteria (N>8), thus assess support of aquatic life uses as FST.

For 1996 report, 1/4/95 report of CSO discharges indicates that City of Clinton has 10 CSOs which are likely sources of pathogens BOD and nutrient enrichment in the Miss. Rvr. near Clinton. No monitoring data are available to assess impacts.

For 1998 report, no viols of Class B(WW) WQ criteria for either conventional or toxic contaminants in the 26 samples collected at for NASQAN during the November 1995 to September 1997 period. A study was conducted by ADM Corn Processing, Clinton, in Beaver Slough during summer and fall, 1996, in response to complaints that nets set by commercial fishermen in Beaver Slough were fouled with slime growth. ADM placed samplers both in Beaver Slough and outside the slough to determine any differences in slime growth between the two areas. Results (as stated in ADM letter of March 25, 1997 to Iowa DNR (D. McAllister) suggest (1) that ADM wastes appear to accentuate the growth of the slime organism, (2) that slime growth is enhanced by presence of small quantities of organic matter, primarily corn starch, in low flow quiet areas before being mixed with the flow of the main river, (3) slime growth is not enhanced when organic matter is allowed to mix in the main river, and (4) slime growth is not enhanced by residual or partially digested starch containing waste from ADM's wastewater treatment plant. ADM conducted a review of its operations in an attempt to identify and eliminate sources of starch which could enter the river and enhance slime growth. A follow-up study is under way to evaluate the effectiveness of starch reduction efforts at the ADM facility. Based on occurrence of slime growth in Beaver Slough, and potentially in areas downstream of Beaver Slough, assess support of the Class B(WW) aquatic life uses as PS. Bacterial data not available for developing an assessment of Class A uses. Although not designated for Class C drinking water uses, none of the 25 samples collected from Nov 95-Sep 97 contained levels of atrazine (max=1.15 ug/l), alachlor (max=0.05 ug/l) and cyanazine (max=0.24 ug/l) above their respective MCLs or MCLG. Levels of NO₂+NO₃-N in the 26 samples all < 3 mg/l. Aquatic life uses also impacted by siltation of backwaters. Fish tissue conducted for the 1997 RAFT program showed levels of all contaminants to be well below FDA action levels and DNR levels of concern for composite samples of filets from carp and white crappie.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(WW) aquatic life uses remain assessed as "partially supported." Fish consumption uses remain assessed as "fully supported." EXPLANATION: An assessment of support of the Class A (primary contact recreation) uses was not developed due to lack of sufficient data on levels of indicator bacteria in this river reach. The Class B(WW) aquatic life uses remain assessed as "partially supported" due to the continuing problem with growth of slime in the heavily-industrialized Beaver Slough portion of this river reach (see assessment for the 1998 report above). Previous studies conducted by ADM in 1996, 1998, and 1999 have shown levels of slime at sample sites in the Beaver Slough portion of the Mississippi River tend to be higher than at main channel sites or at sites in Beaver Slough upstream from the ADM facility. As required by Iowa DNR's April 26, 2000 "notice of violation" of the state's narrative water quality standard on "aesthetically objectionable conditions," ADM has submitted plans for additional study of the bacterial slime problem; this study is to begin in fall 2000. The goal of this study is to identify the causative agent in the growth of slime. Once identified, steps can be potentially be taken to reduce the slime problem. Despite the assessment as "impaired" for Class B(WW) uses, results of water quality monitoring at the USGS National Stream-Quality Accounting Network at Clinton (station 05420500) show (1) no violations of Class B(WW) water quality criteria for pH, ammonia-nitrogen in the 25 samples analyzed during the 1998-1999 biennial period, (2) no violations of Class B(WW) chronic criteria for toxic organic compounds or pesticides in the 19 samples analyzed during this biennial period, and (3) no violations of Class B(WW) chronic criteria for toxic metals in the 17 samples analyzed during the biennial period. Two of 24 samples (8%) collected during this biennial period violated the state Class B(WW) criterion for dissolved oxygen of 5.0 mg/l. These violations occurred on July 1, 1998 at 9:20 AM (4.7 mg/l) and on July 9, 1998 at 12:30 PM (4.4 mg/l). According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), however, the percentage of violations of the dissolved oxygen criterion at this station (8%) does not suggest a water quality impairment (these guidelines allow up to 10% violations for conventional parameters such as pH, dissolved oxygen, and temperature before impairment of water quality is indicated). Although not designated for Class C drinking water uses, none of the 25 samples collected during the October 1997-September 1999 biennial period contained levels of atrazine, alachlor, or cyanazine above their respective MCLs or MCLGs. Levels of NO₂+NO₃-N in the 26 samples were all well below the 10 mg/l MCL (maximum = 3.88 mg/l). Fish consumption uses remain assessed as "fully supported" based on EPA/DNR fish tissue (RAFT) monitoring in 1997 at Shrickers Slough that showed levels of contaminants in composite samples of filets from common carp and white bass were well below the respective FDA action levels and DNR levels of concern. Additional RAFT monitoring conducted in 1999 downriver from Camanche showed similar results for composite samples of filets from channel catfish and flathead catfish: levels of all contaminants were below 1/2 the respective

Rivers and Streams: Northeast Iowa River Basins

Mississippi River and Direct Tributaries

FDA action levels and DNR levels of concern.

MISSISSIPPI R

-- L&D 13-Clinton to L&D 11-Dubuq

Waterbody ID No.: IA 01-NEM-0020

Subsegment No.: 1

Subsegment Description: L&D 13 (Clinton) to Catfish Creek

Subsegment Length: 60 miles

ASSESSMENT COMMENTS: Special study of low DO/sediment oxygen demand conducted by Sullivan and Endris (1998).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Insufficient information; not assessed for the 1994 or 1996 reports.

For the 1998 report, used results of special study conducted by the Wisconsin DNR (Sullivan and Endris, January 1998) that showed low levels of dissolved oxygen (<3.0 mg/l) in the main channel of the Mississippi River during a low flow period in late June/early July 1997. Based on results of a sediment oxygen demand study in areas with and without zebra mussels, concluded that high densities of zebra mussels were likely responsible for the low DO values. This information suggests an immediate threat to the water quality of the Upper Mississippi River. Although study did not extend past L&D 12, considered the low DO conditions upriver to extend down through Pool 13.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(WW) aquatic life uses remain assessed as "fully supporting / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class A uses were not assessed due to lack of information on levels of indicator bacteria in this reach of river. The Class B(WW) uses remain assessed as "fully supporting / threatened" based on the 1997 study of dissolved oxygen levels by Sullivan and Endris (1998) of the Wisconsin DNR (see assessment for the 1998 report above). Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Northeast Iowa River Basins

Mississippi River and Direct Tributaries

MISSISSIPPI R

-- L&D 11-Dubuque to Wisconsin R.

Waterbody ID No.: IA 01-NEM-0030

Subsegment No.: 0

Subsegment Description: L&D 11-Dubuque to Wisconsin R.

Subsegment Length: 46 miles

ASSESSMENT COMMENTS: Sampled for the 1994 RAFT program. Special study conducted by Wisconsin DNR in summer 1997 and 1998.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of fish tissue monitoring conducted for the 1994 RAFT program to assess fish consumption uses as FST due to (1) levels of all contaminants were less than 1/2 FDA action levels and less than DNR levels of concern for samples of channel catfish filets (bottom feeder) and smallmouth bass filets (predator species).

For the 1998 report, used assessment of support of fish consumption uses developed for the 1996 report (=FS). Continue to assess overall support as FST due to known threats to water quality from nonpoint sources and exotic species. Also, used results of special study conducted by the Wisconsin DNR (Sullivan and Endris, January 1998) that showed low levels of dissolved oxygen (<3.0 mg/l) in the main channel of the Mississippi River during late June/early July 1997 during a period of high water temperatures and low river flow from Pool 9 downriver to Pool 12. Based on results of a study of the sediment oxygen demand in areas with and without zebra mussels, concluded that high densities of zebra mussels in the river were responsible for the low DO conditions; decomposition of phytoplankton is also believed to contribute to this problem.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(WW) aquatic life uses remain assessed as "fully supporting / threatened." Fish consumption uses remain assessed as "fully supported." EXPLANATION: The Class A uses were not assessed due to lack of information on levels of indicator bacteria in this reach of river. The Class B(WW) uses remain assessed as "fully supporting / threatened" based on the 1997 study of dissolved oxygen levels by Sullivan and Endris (1998) of the Wisconsin DNR (see assessment for the 1998 report above). Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1994 downstream from Guttenberg that showed levels of contaminants in composite samples of filets from channel catfish and smallmouth bass were less than 1/2 the respective FDA action levels and DNR levels of concern (see assessment for the 1996 report above). EPA/DNR fish tissue monitoring was conducted at this site again in 2000; results will not be available until mid-2001.

MISSISSIPPI R

-- Wisconsin R. to IA/MN line

Waterbody ID No.: IA 01-NEM-0040

Subsegment No.: 1

Subsegment Description: Wisconsin R upstream to L&D 9

Subsegment Length: 43 miles

ASSESSMENT COMMENTS: Special monitoring conducted in summers of 1997 and 1998 by Wisconsin DNR.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Insufficient information; not assessed for the 1994 or 1996 reports.

For the 1998 report, used results of special study conducted by the Wisconsin DNR in summer 1997 that showed low levels of dissolved oxygen in the main channel of the Mississippi River from Pool 9 downriver to Pool 12. Based on densities of zebra mussels in the river, along with a study of sediment oxygen demand in areas with and without zebra mussels, study concluded that high densities of zebra mussels were likely the cause of the low DO. This study suggests an immediate threat to the water quality of the Upper Mississippi River.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(WW) aquatic life uses remain assessed as "fully supporting / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class A uses were not assessed due to lack of information on levels of indicator bacteria in this reach of river. The Class B(WW) uses remain assessed as "fully supporting / threatened" based on the 1997 study of dissolved oxygen levels by Sullivan and Endris (1998) of the Wisconsin DNR (see assessment for the 1998 report above). Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this river reach.

Rivers and Streams: Northeast Iowa River Basins

Mississippi River and Direct Tributaries

MISSISSIPPI R

-- Wisconsin R. to IA/MN line

Waterbody ID No.: IA 01-NEM-0040

Subsegment No.: 2

Subsegment Description: L&D 9 upstream to state line

Subsegment Length: 43 miles

ASSESSMENT COMMENTS: Sampled as part of RAFT (fish tissue monitoring) programs in 1990, 91, 92, 95, 97 and 99. Special study of dissolve oxygen by Wisconsin DNR in 1997.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Results of fish tissue monitoring for RAFT suggest no impairments; all contams < 1/2 FDA action levels. Overall assessment reduced to FST due to known threats to WQ of UMR.

For 1996 report, used assessment of fish consumption uses (FS) developed for the 1994 report. Due to lack of information on other aquatic life impacts, changed assessment of Class B aquatic life uses from FST to NAS.

For 1998 report, used results of fish tissue monitoring in 1995 to assess fish consumption uses as FS: all contams < 1/2 FDA.* Continue to consider overall assessment as FST due to knowns threats from nonpoint sources and exotic species (especially zebra mussels) to the Upper Mississippi River. The only violations at the Wisconsin DNR station at Lynxville was 2 violations of the WQS pH in 26 samples collected during the two-year assessment period (=8% violation =FS of aquatic life uses). Also, had one violation of the Class B(WW) WQ criterion for dissolved oxygen in 26 samples collected during the two year assessment period (=4% violation =FS of aquatic life uses). Violations for pH occurred in May and June 1997; violation of dissolved oxygen occurred in July 1997. A report prepared by Sullivan and Endris (Wisconsin DNR, January 1998) suggest that high densities of zebra mussels in Pools 9 to 12 caused unusually low levels of DO (<3.0 mg/l) during a low flow/high temperature period in late June 1997. This information, and additional information collected in 1998, suggests an immediate threat to the water quality and aquatic life of the Upper Mississippi River. *Results of the 1997 RAFT fish contaminant monitoring program were received in August 1998. Levels of all contaminants in the whole-fish composite sample of carp taken near Lansing were well-below 1/2 the respective FDA action levels. Consistent with previous monitoring, these results suggest that the fish consumptions uses as FS.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(WW) aquatic life uses remain assessed as "fully supporting / threatened." Fish consumption uses remain assessed as "fully supporting." EXPLANATION: The Class A uses were not assessed due to lack of information on levels of indicator bacteria in this reach of river. The Class B(WW) uses remain assessed as "fully supporting / threatened" based on the 1997 study of dissolved oxygen levels by Sullivan and Endris (1998) of the Wisconsin DNR (see assessment for the 1998 report above). Due to the transition period between the old and new STORET systems, water quality data for 1998-1999 biennial period from the Wisconsin DNR monitoring station at Lynxville (123016) were not readily available. Fish consumption uses remain assessed as "fully supporting" based on results of EPA/DNR fish tissue (RAFT) monitoring at Lansing (1) in 1997 (see assessment for the 1998 report above) and (2) in 1999. Similar to the 1997 sampling, levels of contaminants in the 1999 composite sample of whole-fish carp were also less than 1/2 of the respective FDA action levels and DNR levels of concern.

UNNAMED TRIBUTARY

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 01-NEM-0058

Subsegment No.: 0

Subsegment Description: mouth (S17, T77N, R1E, Muscatine Co.) to headwaters (S31, T78N, R

Subsegment Length: 4 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of a fish kill in October 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
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BASIS FOR ASSESSMENT AND COMMENTS:

New waterbody for the 2000 305(b) cycle. Not assessed for the 1994, 1996, or 1998 reports.

For the 2000 report: SUMMARY: The general aquatic life uses were assessed as "partially supported." EXPLANATION: A fish kill occurred in this unnamed tributary of Long Branch and the South Raccoon River on October 30, 1999. The kill was attributed to "manure." Approximately 2 miles of stream were affected; an estimated 7,500 fish were killed. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the aquatic life uses of this general use stream reach were assessed as "partially supported."

Rivers and Streams: Northeast Iowa River Basins

North Fork Maquoketa River Subbasin

MAQUOKETA R, N FK

-- mouth-Jackson to Whitewater Cr

Waterbody ID No.: IA 01-NMQ-0010

Subsegment No.: 0

Subsegment Description: mouth to Whitewater Cr, Jones Co.

Subsegment Length: 37 miles

ASSESSMENT COMMENTS: DNR monthly fixed monitoring station near Maquoketa. Runoff sampling in May & July 1996 by DNR/LTRMP.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had one violation of ammonia criterion in 36 samples; reach assessed as FST.

For 1994 report, no violations of any criteria. Assess as FST due to known threats of AG NPS to support of aquatic life uses.

For 1996 report, had one violation of chronic criterion for NH₃ in 36 samples (March 8, 1993: 7.6 mg/l > chronic criterion of 3.09 mg/l but < acute criterion of 15.46 mg/l). Section 305(b) guidelines allow 1 violation of toxics in an abundant data set. Assess as FST due to known threats from NPS pollution.

For 1998 report, had no violations of water quality criteria for either conventional or toxic pollutants in the 24 samples collected monthly over the two-year period. A summary of water quality in the N.Fk. Maquoketa was prepared by DNR/EPD in 1997 as part of a multi-agency study on water quality of the Maquoketa River watershed. This study concluded that the water quality of the N.Fk. is typical of streams draining the Southern Iowa Rolling Loess Prairies ecoregion and that the primary sources of sediment and nutrients delivered to the Mississippi R by the Maquoketa River were due to relatively erosive subbasins in the lower Maquoketa River basin. Runoff sampling was conducted in May and July 1996 by DNR/LTRMP (Bellevue) staff at 24 sites along the Maquoketa River and its major tributaries. Based on results of this monitoring, three subwatersheds of the N.Fk. were (Farmers, Lytle, and Whitewater creeks) were identified as contributing excessive amounts of sediment and nutrients to the Maquoketa River. This information was used to generate support for watershed projects designed to reduce levels of sediment and nutrient delivery. This effort is being coordinated by the Maquoketa River Alliance and the Limestone Bluffs Resource Conservation and Development Area Office at Maquoketa. NRCS, Farm Bureau, county Extension staff, and landowners are cooperating in this effort. Despite results of the special runoff studies conducted by the DNR/LTRMP, continued to assess the support of the aquatic life uses of this reach of the N.Fk. as FST. Although this stream has relatively high levels of suspended solids and nutrients, follow-up monitoring is needed to determine the status of the aquatic communities of this river reach and to determine whether the Class B(WW) aquatic life uses are impaired.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supporting / threatened." The fish consumption uses remain "not assessed." EXPLANATION: Results of water quality monitoring at the DNR monthly station near Maquoketa show no violations of Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen in the 24 samples collected during the October 1997-September 1999 biennial period. In addition, no violations of Class B(WW) chronic water quality criteria occurred in the one sample analyzed for toxic metals during this biennial period. Thus, continue to assess the aquatic life uses as "fully supported / threatened." The fish consumption uses are "not assessed" due to lack of recent fish contaminant monitoring in this river reach.

Rivers and Streams: Northeast Iowa River Basins

North Fork Maquoketa River Subbasin

MAQUOKETA R, N FK

-- Whitewater Cr to headwaters

Waterbody ID No.: IA 01-NMQ-0020

Subsegment No.: 2

Subsegment Description: Bear Cr to trib S18,T90N,R1W Dubuque Co.

Subsegment Length: 53 miles

ASSESSMENT COMMENTS: Assessment based on reports of fish kills.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates slightly below avg. habitat quality. Frequent pasture use channel alterations and erosion of stream banks noted. Some diversity of substr. and several pool/riffle sequences observed. Rel. low fish species richness, but good numbers of fish observed. Abundance of aquatic vegetation suggests nutrient enrichment.

For 1996 report, used assessment of aquatic life use support developed for the 1994 report (PS). Review of field sheet shows that habitat score is average (but at low end of FST streams), and that seining was hindered by "very good growth of aquatic veg., duckweed, watercress, and rush." In addition, fish kills were reported in the vicinity of New Wine Park north of Dyersville in June 1995 and August 1996 with no source/cause of the kill indentified. Thus, maintain assessment as PS.

For 1998 report, due to no reports of fish kills during the period August 1996 to August 1998, would upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST.* A review of the field sheet from the October 1991 DNR stream use assessment, & the 1989 DNR survey at New Wine Park in Dubuque County, however, suggests that the Class B(LR) aquatic life uses are partially supported due to (1) presence of relatively low fish community diversity at both locations (species/families: 4/1 (1991, seine); 6/3 (1989, shock)) for streams in the Iowan Surface subcoregion (47c), (2) presence of less than a majority of the expected fish taxa at both locations (3 of 12 (1991); 5 of 12 (1989), and (3) a history of fish kills in this stream reach. The relatively low aquatic diversity in this stream reach may be due to other factors; e.g., notes on the field sheet from the 1991 stream use assessment indicate abundant growth of watercress near the upstream boundary of the Class B(LR) reach, thus suggesting inflows of coldwater to the stream. Based on habitat evaluations, however, the low diversity is not due to poor quality aquatic habitats. Follow-up monitoring is needed to update this assessment, to better define the status of the aquatic communities, and to determine the degree to which the Class B(LR) uses may be impaired.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: The previous assessment of the Class B(LR) uses was based on DNR stream assessments from 1989 and 1991. Although evaluation of these historical biological assessments suggest an impairment of the aquatic life uses (see assessment for the 1998 report above), the assessments are too old (greater than five years) to accurately characterize current conditions of the stream. This stream reach has a history of fish kills (see assessment for the 1996 report above). During the October 1997-September 1999 biennial period, a fish kill was reported on July 22, 1998, near New Vienna in Dubuque County. The kill was attributed to runoff of animal waste; an estimated 34,300 fish were killed over 4.2 miles of this stream. As noted in the previous assessments (see above), fish kills also occurred in this reach in June 1995 and August 1996. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the assessment of support for the Class B(LR) aquatic life uses remains "partially supported" due to reoccurring fish kills.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Northeast Iowa River Basins

North Fork Maquoketa River Subbasin

FARMERS CR -- mouth-Jackson to headwaters
Subsegment No.: 0 Subsegment Description: mouth to trib S8,T86N,R3E Jackson Co.

Waterbody ID No.: IA 01-NMQ-0040

Subsegment Length: 17 miles

ASSESSMENT COMMENTS: Assessment based on occurrence of fish kills.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates fairly good habitat quality. Stream was assessed near upstream boundary of B(LR). Some diversity of substr. and several pool/riffles observed. Rock outcrop provides structure and source of coarse substr. Fairly good diversity of fish species observed; one pool was too deep to seine effectively. Pasture use a threat to integrity of stream.

For 1996 report, used assessment of aquatic life use support developed for the 1994 report (=FST).

For 1998 report, reviewed results of runoff studies conducted by DNR/LTRMP staff in late May and early July 1996 that showed the Farmers Creek to be contributing relatively high levels of total suspended solids and nutrients (phosphorus) to the Maquoketa R. Support of the Class B(LR) uses was downgraded from FST to PS due to (1) low fish community diversity (8 cyprinids) and (2) less than a majority of the expected fish taxa (4 of 9) for the Southern Iowa Loess Prairies subcoregion (47f). Under guidance of the Maquoketa River Alliance, several groups (e.g., NRCS and county extension) are working to address problems with nonpoint source contributions of suspended solids and nutrients (phosphorus). Additional monitoring of the aquatic communities of this stream are needed to update this assessment, to determine the status of the aquatic communities and habitats, and to determine the degree to which the Class B(LR) uses may be impaired. A major fish kill was reported on this stream south of Lamotte on September 22, 1997. The kill was attributed to high levels of ammonia and BOD from an animal feeding operation. Nearly 13 miles of stream were affected, and an estimated 133,000 fish were killed.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "not supported." EXPLANATION: The previous (1998) assessment of support of the Class B(LR) uses ("partially supported") was based on a review of an October 1991 DNR stream use assessment. The results from this assessment, however, are now considered too old (greater than five years) to be useful for developing water quality assessments of current conditions. The assessment for the 2000 report is based on the occurrence of a second fish kill within a three-year period. As described in the assessment for the 1998 report (above), a fish kill occurred south of Lamotte on September 22, 1997; this kill was attributed to runoff from a feedlot. A more recent kill occurred south of Lamotte on July 7, 1998; the kill was attributed to rainfall runoff from land-applied dairy manure; an estimated 4,200 fish were killed over a 3.5 mile reach of stream. According to the DNR assessment methodology for Section 305(b) reporting, the occurrence of two or more pollution-caused fish kills within the most recent three-year period (1997-1999) indicates that the aquatic life uses are "not supported." Thus, the assessment of support of the Class B(LR) aquatic life uses was changed from "partially supported" to "not supported."

Rivers and Streams: Northeast Iowa River Basins

North Fork Maquoketa River Subbasin

LYTLE CR

-- mouth-Jackson to headwaters

Waterbody ID No.: IA 01-NMQ-0050

Subsegment No.: 2

Subsegment Description: Buncombe Cr to trib S4,T87N,R2E Dubuque

Subsegment Length: 28 miles

ASSESSMENT COMMENTS: Oct 91 SUA: habscr/fshscr=22/8 (seine); 1995 Biocriteria: Fish IBI= 48(fair), BM-IBI= 54(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess form indicates slightly below habitat quality Frequent pasture use impacts including stream bank erosion observed. Lot of aquatic vegetation noted in stream suggesting nutrient enrichment. Low diversity and number of fish observed. Suspect some type of water quality based impairment. Stream was assessed near upstr. B(LR) boundary - may not be represent. of segment as a whole.

For 1996 report, used data from one biocriteria site to make use support determination. Fish and habitat metrics from stream use assessment protocol were applied to the data. Physical habitat quality was good at biocriteria site. Fish diversity was fairly good and numbers of fish were fair. Water was moderately turbid.

For the 1998 report, used a review of the results of the July 1995 DNR biocriteria sampling in Dubuque County to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) very diverse fish community (17 species from 5 families) for streams in the Southern Iowa Rolling Loess Prairies subecoregion (47f) and (2) presence of nearly all the expected fish taxa (8 of 9) for streams in this subregion. Despite the moderate impacts to the physical characteristics of this stream shown by the October 1991 DNR stream use assessment in Dubuque County, including frequent pasturing of the riparian corridor and frequent streambank erosion, the results of the DNR biocriteria sampling clearly show that this stream reach fully supports the designated Class B(LR) uses.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 48 (fair) and the BM-IBI score was 54 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Turkey River Subbasin

MILL CR

-- mouth-Jackson to headwaters

Waterbody ID No.: IA 01-TRK-0030

Subsegment No.: 2

Subsegment Description: L Mill Cr to trib in S1,T86N,R3E Jackson

Subsegment Length: 9.6 miles

ASSESSMENT COMMENTS: Assessment based on survey of trout reproduction.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1996 report or the 1998 report. The Upper Big Mill Creek Watershed Project focused on reducing the amount of sediment reaching the stream from upland erosion, reducing streambank erosion, improved management of agricultural fertilizers and pesticides, and improved management of animal waste to improve water quality in this coldwater stream. As part of this project, landowners may be offered financial assistance for the nonpoint source control practices that include sediment control basins, grassed waterways, stream corridor protection, integrated crop management, no till, animal waste management, streambank stabilization, and sping protection. This project also involves water quality monitoring through the Izaak Walton League "Save Our Streams" program. For more information on this project, call 319/652-3227.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported." According to Moeller (1999), this reach of Big Mill Creek is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of trout without stocking. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

BIG MILL, S FK

-- mouth-Jackson) to headwaters

Waterbody ID No.: IA 01-TRK-0050

Subsegment No.: 0

Subsegment Description: mouth to W line S17,T86N,R4E Jackson Co.

Subsegment Length: 0.9 miles

ASSESSMENT COMMENTS: Assessment based on survey of trout reproduction.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1994, 1996, or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remained "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), the South Fork of Big Mill Creek is in the category of Iowa trout streams with at least some level of documented trout reproduction but of unknown frequency; these streams are not generally capable of maintaining a viable trout population at this time. Fish consumption uses remain "not assessed" due to lack of fish tissue monitoring in this stream reach.

Rivers and Streams: Northeast Iowa River Basins

Turkey River Subbasin

STORYBROOK HOLLOW

-- mouth-Jackson to headwaters

Waterbody ID No.: IA 01-TRK-0060

Subsegment No.: 0

Subsegment Description: mouth to S line S12,T86N,R3E Jackson Co

Subsegment Length: 1.3 miles

ASSESSMENT COMMENTS: Assessment based on survey of trout reproduction.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1994, 1996, or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses remain assessed as "fully supported." According to Moeller (1999), Storybrook Hollow is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of trout without stocking. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

CATFISH CR

-- mouth-Dubuque to headwaters

Waterbody ID No.: IA 01-TRK-0100

Subsegment No.: 3

Subsegment Description: S9,T88N,R2E to S30,T88,R2E Dubuque Co.

Subsegment Length: 14 miles

ASSESSMENT COMMENTS: 1995 biocriteria: habscr/fshscr = 31/13 (shock, 18 spp., 5 fams.).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996 report: Used data from one biocriteria site in Dubuque County to make use support determination. Fish and habitat metrics from the stream use assessment protocol were applied to the data. Sampling results indicate very good physical habitat and fish were very abundant and included cold water species such as longnose dace, so. redbelly dace, rainbow trout, brown trout, and brook trout.

For the 1998 report, used a review of results from the July 1995 DNR biocriteria sampling in Dubuque County to upgrade the assessment of support of the Class B(CW) uses from FST to FS due to (1) presence of the expected game fish species (i.e., brown trout (6), rainbow trout (2), & brook trout (3)), (2) presence of a very diverse fish community (18 species from 5 families) for streams in the Driftless Area ecoregion (S2), (3) presence of all the expected fish taxa (9 of 9) for streams in this region, and (4) indications of very high quality aquatic habitats.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

Rivers and Streams: Northeast Iowa River Basins

*Turkey River Subbasin***LITTLE MAQUOKETA R**

-- mouth-Dubuque to headwaters

Waterbody ID No.: IA 01-TRK-0140

Subsegment No.: 1

Subsegment Description: mouth to Hogans Br S36,T89N,R1 W Dubuque

Subsegment Length: 25 miles

ASSESSMENT COMMENTS: Habscrs/fshscrs= 1990 SUA: 32/9 (seine); 1995 biocriteria: 30/13 (shock); 1995 Biocriteria: Fish IBI= 63(good), BM-IBI= 62(good).SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
 Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, assessed support of aquatic life uses as FST due to exceptional habitat score (32) and due to information gathered during biocriteria sampling during 1995. Fish and habitat metrics from stream use assessment protocol were applied to the data. Data indicate very good! habitat quality. Moderate diversity and good numbers of fish including many smallmouth bass.

For the 1998 report, used a review of the field sheet from the August 1990 DNR stream use assessment near Durango, and results of the September 1995 DNR biocriteria sampling near Twin Springs to upgrade the assessment of support of the Class B(WW) aquatic life uses from FST to FS due to [BC data] (1) presence of good numbers of the expected game fish species (57 smallmouth bass, including adults), (2) a relatively diverse fish community (17 species from 5 families) for streams in the Driftless Area ecoregion (52), (3) presence of nearly all the expected fish taxa (8 of 9) for streams in this region, and (4) indications of exceptional habitat quality, with good low flow characteristics, very diverse substrates, numerous pool/riffle sequences, no channel alterations, and only few areas with streambank erosion.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 63 (good) and the BM-IBI score was 62 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

LITTLE MAQUOKETA R, M FK

-- mouth-Dubuque to headwaters

Waterbody ID No.: IA 01-TRK-0180

Subsegment No.: 1

Subsegment Description: mouth to W line S31,T90N,R1E Dubuque Co.

Subsegment Length: 14 miles

ASSESSMENT COMMENTS: Assessment based on survey of trout reproduction.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
 Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No informatin available; not assessed for the 1994, 1996, or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), this reach of Bankston Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Turkey River Subbasin

UNNAMED CR

-- mouth-Dubuque to headwaters

Waterbody ID No.: IA 01-TRK-0187

Subsegment No.: 0

Subsegment Description: mo S29,T89N,R1E->trib S24,T89N,R1W Dubuque Co.

Subsegment Length: 2.3 miles

ASSESSMENT COMMENTS: DNR stream use assessment conducted in October 1994.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For 1996 report, used results of the October 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (30) much better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of excellent aquatic habitat including very diverse substrates, numerous pool/riffle sequences, no channel alterations, and very stable and well-vegetated stream banks, and (3) fish score (13) better than the 75th percentile score for stream assessments made with seines (high score due primarily to lack of pollution-tolerant species in the fish sampled). Field sheet indicates that rocky habitat made seining difficult. Field sheet does not indicate any threats to continued support of the aquatic life uses.

For the 1998 report, used a review of the field sheet from the October 1994 DNR stream use assessment in Dubuque County to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a majority of the expected fish taxa (6 of 9) for streams in the Driftless Area ecoregion (S2) and (2) indications of exceptionally high quality aquatic habitats (see above assessment developed for the 1996 report). Fish community diversity was relatively low (7 species from 2 families) for this region; notes on field sheet indicate that some areas were too rocky to seine effectively. Additional sampling with more effective gear type would likely produce additional fish taxa.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported / threatened" (minor impacts). EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the October 1994 DNR stream use assessment. The results of the October 1994 DNR stream use assessments-upon which the previous assessment of the Class B(LR) uses was based-are approximately 5 years old and can be used to assess current water quality conditions.

UNNAMED CR

-- mouth-Dubuque to headwaters

Waterbody ID No.: IA 01-TRK-0188

Subsegment No.: 0

Subsegment Description: mo S36,T89N,R1W to W ln S25,T89N,R1W Dub

Subsegment Length: 1.7 miles

ASSESSMENT COMMENTS: DNR stream use assessment in October 1994.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For 1996 report, used results of the October 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (26) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of very diverse substrates, numerous pool/riffle sequences, only isolated channel alterations, and relatively stable stream banks and (3) fish score (13) better than the 75th percentile score for stream assessments made with seines. Field sheet does not indicate any threats to continued support of the aquatic life uses, although indications of isolated channel alterations suggests a threat.

For the 1998 report, used a review of the field sheet from the October 1994 DNR stream use assessment in Dubuque County to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of a moderately diverse fish community (12 species from 2 families) for streams in the Driftless Area ecoregion, (2) presence of nearly all the expected fish taxa (8 of 9) for streams in this region, and (3) indications of very good quality aquatic habitats (see above assessment developed for the 1996 report).

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the October 1994 DNR stream use assessment. The results of the October 1994 DNR stream use assessments-upon which the previous assessment of the Class B(LR) uses was based-are approximately 5 years old and can be used to assess current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Turkey River Subbasin

Unnamed Cr. -- mouth (S line, S34, T89N, R1W, Dubuque Co.) to headwaters. New segment for the 2000 305(b) cycle. Waterbody ID No.: IA 01-TRK-0192

Subsegment No.: 0 Subsegment Description: mouth (S line, S34, T89N, R1W, Dubuque Co.) to headwaters Subsegment Length: 2 miles

ASSESSMENT COMMENTS: Fish kill near Epworth, Dubuque Co., 1 August 1998.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

"General Use" waterbody. No information available; not assessed for the 1994, 1996 or 1998 reports.

For the 2000 report: SUMMARY: The general aquatic life uses of this stream were considered "partially supported." EXPLANATION: A fish kill occurred in this unnamed tributary of the Little Maquoketa River on August 24, 1998, near Epworth in Dubuque County. The kill was attributed to runoff of animal waste. Approximately 1 mile of stream was affected; an estimated 923 fish were killed. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the general aquatic life uses of this stream were assessed as "partially supported."

TURKEY R -- mouth-Clayton to Volga R Waterbody ID No.: IA 01-TRK-0200

Subsegment No.: 0 Subsegment Description: mouth to Volga R, Clayton Co. Subsegment Length: 21 miles

ASSESSMENT COMMENTS: DNR quarterly WQ monitoring station south of Garber at USGS gage.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1994 or 1996 reports.

For the 1998 report, used results from the DNR quarterly WQ monitoring station near Garber to assess support of the Class B(WW) aquatic life uses as FS due to lack of violations of Class B(WW) water quality criteria in the 8 samples collected over the 1996-97 period. Revised the assessment to FST due to potential threats from nonpoint sources. In addition, the March/ April 1998 Iowa Conservationist identifies the Turkey River from Elkader to Osterdock as providing good angling opportunities for channel catfish.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supporting / threatened." Fish consumption uses remain "not assessed." EXPLANATION: Continue to use the assessment of the Class B(WW) uses developed for the 1998 report (above). This assessment was based on results of water quality monitoring during the 1996-1997 biennial period at the DNR quarterly monitoring station near Garber. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Garber station began in October 1999. Fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Turkey River Subbasin

TURKEY R

-- Volga R to L Turkey R Fayette

Waterbody ID No.: IA 01-TRK-0210

Subsegment No.: 4

Subsegment Description: bridge @ Elgirt S13,T94N,R7-> L Turkey R

Subsegment Length: 65 miles

ASSESSMENT COMMENTS: Fish tissue (RAFT) monitoring conducted in 1999.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Not assessed

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 or 1998 reports. The annual "fishing forecasts" in the Iowa Conservationist magazine identify this reach of the Turkey River as providing "excellent habitat" for smallmouth bass. Water quality monitoring is needed, however, to better determine the degree to which the Class B(WW) aquatic life uses are supported.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain "not assessed." The fish consumption uses are assessed as "fully supported." EXPLANATION: The Class B(WW) uses remain "not assessed" due to the lack of chemical or biological monitoring data for this river reach. Fish consumption uses are assessed as "fully supporting" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1999 near Clermont. Levels of nearly all contaminants in the composite samples of filets from common carp and smallmouth bass were below the analytical limit of detection (only 4 of 23 contaminants were detected). Levels of the few contaminants detected were much less than 1/2 of the respective FDA action levels or DNR levels of concern.

TURKEY R

-- L Turkey R to headwaters

Waterbody ID No.: IA 01-TRK-0220

Subsegment No.: 1

Subsegment Description: L Turkey R->VrSp rd S34,T99N,R11W Howard

Subsegment Length: 52 miles

ASSESSMENT COMMENTS: DNR stream use assessment conducted in September 1995.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1995 DNR stream use assessment at Vernon Springs to assess support of the Class B(WW) aquatic life uses as FST due to (1) habitat score (27) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of above average habitat characteristics and low-flow characteristics, and (3) presence of an extremely diverse fish community (24 species; 4 families) despite difficult sampling conditions (high, turbid water). Field sheet does not suggest any threats to continued support of the aquatic life uses. Reach is atypical due to presence of lowhead dam, but expect similar aquatic community throughout subsegment.

For the 1998 report, used a review of the field sheet from the September 1995 DNR stream use assessment near Vernon Springs to upgrade the assessment of support of the Class B(WW) aquatic life uses from FST to FS due to (1) presence of a very diverse fish community (24 species from 4 families) for streams in the Iowan Surface subcoregion (47c), (2) presence of nearly all the expected fish taxa (10 of 11) for Class B(WW) streams in this subregion, (3) presence of good numbers of the expected game fish species (smallmouth bass, reported as "common," with adults from 10 to 18 inches (TL) and juveniles from 2-4 inches present), (4) presence of several environmentally sensitive species, including rosyface shiner, black redhorse, rock bass, smallmouth bass, rainbow darter, and banded darter, and (5) indications of above average habitat quality due to very diverse substrates, presence of pool/riffle sequences, and only isolated impacts to the physical characteristics of this stream reach. As noted in the assessment developed for the 1996 report (above), the 1995 stream use assessment was conducted below a lowhead dam at Vernon Springs; thus, habitat conditions were somewhat atypical. Additional monitoring is needed at other locations in this relatively long (approx. 45 mile) reach of Class B(WW) stream to improve the accuracy of the assessment of support of the Class B(WW) uses.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Continue to use the assessment of the Class B(WW) uses developed for the 1998 report (above). This assessment was based on results of the DNR stream use assessment conducted in September 1995. Additional chemical and/or biological monitoring is needed in this long assessment reach. Fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this river reach.

Rivers and Streams: Northeast Iowa River Basins

Turkey River Subbasin

LITTLE TURKEY R

-- mouth-Clayton to headwaters

Waterbody ID No.: IA 01-TRK-0230

Subsegment No.: 1

Subsegment Description: mo-> White Pine Hol S31,T91N,R2W Clayton

Subsegment Length: 12 miles

ASSESSMENT COMMENTS: Segment not assessed for the 2000 305(b) cycle.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
 Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the November 1991 and October 1994 DNR stream use assessments near Millville to assess support of the Class B(WW) aquatic life uses as FST due to (1) habitat score (30) far better than the overall median score (22) for DNR stream use assessments (some of the highest scores for habitat during DNR stream use assessment project, 1990-1995), (2) indications on field sheet of good low-flow characteristics, very diverse substrates, several pool/riffle sequences, very few channel alterations, and stable stream banks with either trees or shrubs dominating the riparian vegetation, and (3) presence of a relatively diverse fish community despite the difficulty of seining in such rocky habitat. Field sheets do not suggest any threats to continued support of the aquatic life uses.

For the 1998 report, used a review of the field sheets from the November 1991 and October 1994 DNR stream use assessments in Clayton County near Millville to continue to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (12 species from 3 families) for streams in the Driftless Area ecoregion, (2) presence of a majority of the expected fish taxa (6 of 9) for streams in this region, and (3) indications of very high quality aquatic habitats (see above assessment developed for the 1996 report). None of the expected game fish species, however, were collected during this assessment, probably due to difficulty of sampling fish from coarse substrates with seines and due to the general difficulty of capturing adult game fish with seines. Additional monitoring is needed to better define the status of the aquatic communities of this stream, especially with regard to presence of the expected game fish species.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Continue to use the assessment of the Class B(WW) uses developed for the 1998 report (above). This assessment was based, in part, on results of DNR stream use assessments conducted in October 1994. The results of this assessment are approximately five years old and thus can be used to assess current water quality conditions. Additional chemical and/or biological monitoring is needed in this assessment reach to better determine the status of water quality and the aquatic communities. Fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this river reach.

BROWNFIELD CR

-- mouth to spring

Waterbody ID No.: IA 01-TRK-0310

Subsegment No.: 0

Subsegment Description: mo. to spring, S31,T91N,R3W, Clayton Co.

Subsegment Length: 0.9 miles

ASSESSMENT COMMENTS: Assessment based on survey of trout reproduction.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully
 Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported." According to Moeller (1999), this reach of Brownfield Creek is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of trout without stocking. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Turkey River Subbasin

FOUNTAIN SPRINGS CR

-- mouth to headwaters

Waterbody ID No.: IA 01-TRK-0330

Subsegment No.: 0

Subsegment Description: mo. to W line,S16,T90N,R4W, Delaware Co.

Subsegment Length: 2.8 miles

ASSESSMENT COMMENTS: Assessment based on survey of trout reproduction.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), Fountain Springs Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

DIBBLE CR

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 01-TRK-0413

Subsegment No.: 0

Subsegment Description: unnamed trib (S27, T95N, R7W, Fayette Co.) to headwaters

Subsegment Length: 9 miles

ASSESSMENT COMMENTS: 1998 Biocriteria: Fish IBI=57 (good), BM-IBI=74 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

2000 report: The assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 57 (good), and the BM-IBI score was 74 (good). The aquatic life use support status was assessed as fully supporting (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Northeast Iowa River Basins

Turkey River Subbasin

LITTLE TURKEY R

-- mouth-Fayette to Crane Cr

Waterbody ID No.: IA 01-TRK-0420

Subsegment No.: 0

Subsegment Description: mouth to Crane Cr, Fayette Co.

Subsegment Length: 12 miles

ASSESSMENT COMMENTS: Fish collection/habitat assessments at 2 sites in 1988. 1997 biocriteria: fish 28 spp., 6 fams., Fish IBI= 82(excellent), BM-IBI= 73(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used old information from a fish survey and from a Section 24 stream use assessment for city of Waucoma to assess aquatic life uses as FST. Evaluation of both the fish community and habitat show a stream of exceptional quality for the state of Iowa (see also an even older report prepared by UHL (UHL Report 80-9)).

For the 1998 report, used results of the September 1997 DNR biocriteria sampling approximately 5 miles north of Hawkeye in Fayette County to update the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST). Used results of the biocriteria sampling to upgrade the assessment of support of the Class B(WW) uses from FST to FS due to (1) presence of a very diverse fish community (27 species from 6 families) for streams of the Iowan Surface subcoregion, including several sensitive species (e.g., American brook lamprey, largescale stoneroller, gravel chub, Ozark minnow, rosyface shiner, black redbreast, smallmouth bass, rainbow darter, and banded darter), (2) presence of nearly all the expected fish taxa (10 of 11) for streams in this subcoregion (only the creek-dwelling blacknose dace was absent), (3) presence of the expected game fish species (smallmouth bass), and (4) lack of violations of Class B(WW) WQ criteria in the sample collected during the biocriteria sampling. Biocriteria sampling in 1997, as well as historical surveys of fish and aquatic macroinvertebrates, has shown the Little Turkey River to be one of the most biologically diverse of Iowa streams.

For the 2000 report, the assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 82 (excellent) and the BM-IBI score was 73 (good). The aquatic life use support was assessed as fully supported (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Northeast Iowa River Basins

Turkey River Subbasin

LITTLE TURKEY R

-- Crane Cr-Fayette to headwaters

Waterbody ID No.: IA 01-TRK-0430

Subsegment No.: 1

Subsegment Description: Crane Cr. to trib S14,T96N,R11W Chickasa

Subsegment Length: 30 miles

ASSESSMENT COMMENTS: Assessment is based on DNR stream use assessment conducted in November 1994.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of stream use assessment to assess aquatic life uses as FST due to (1) relatively high habitat score (29) compared to overall median score (22) for DNR stream use assessments, (2) relatively high fish score (13) compared to streams sampled with seines as part of DNR stream use assessments, and (3) comments on field sheet that include "super habitat."

For the 1998 report, used a review of the field sheet from the November 1994 DNR stream use assessment in Chickasaw County, and a review of field notes from the April 1988 DNR stream use assessment in Fayette County, to continue to assess support of the Class B(WW) aquatic life uses as FST due to (1) very to moderately diverse fish community (species/families, dstr->upstr: 22/5; 9/3) for streams in the Iowan Surface subcoregion (47c), (2) presence of a majority of the expected fish taxa (dstr->upstr: 10 of 11; 6 of 11) for streams in this subregion, and (3) indications of high quality aquatic habitats due to presence of very diverse substrates, several pool/riffle sequences, and only minor impacts to the physical characteristics of this stream. Notes on field sheet indicate that pasturing of the riparian corridor is a potential threat to the continued support of the Class B(LR) uses. In addition, surveys conducted this far have failed to produce the expected game fish species, although (1) both surveys have been conducted with seines and (2) several pools in this stream reach are much too deep to sample with seines or backpack electrofishers. Additional monitoring is needed to better determine the status of the aquatic communities of this stream reach and to determine the status of game fish populations.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Continue to use the assessment of the Class B(WW) uses developed for the 1998 report (above). This assessment was based on results of DNR stream use assessment conducted in November 1994. Additional chemical and/or biological monitoring is needed in this assessment reach to better determine the status of water quality and the aquatic communities. Fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this river reach.

Rivers and Streams: Northeast Iowa River Basins

*Turkey River Subbasin***CRANE CR**

-- mouth to headwaters

Waterbody ID No.: IA 01-TRK-0440

Subsegment No.: 1

Subsegment Description: mo->Spring Cr, S17,T98N,R12W, Howard Co

Subsegment Length: 54 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) 1995 DNR stream use assessment, (2) a 1994 DNR/UHL biocriteria sampling (Fish IBI= 57(good), BM-IBI= 64(good)), and (3) occurrence of fish kills. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996 report: Used data from one stream assessment site and a biocriteria sampling site in Howard County. Habitat quality at both sites was fair to good. Fish community was very diverse and included rare and intolerant species including Am. brook lamprey and small mouth bass.

For 1998 report: Fish kill on Sept. 2, 1997 following an approximately 2" rainfall. No responsible party identified, but salvage activity at an abandoned fertilizer plant, in combination with runoff of other toxics, believed to have caused the kill. Approximately 8,600 fish estimated killed. Due to impact of this fish kill, assess support of the Class B(WW) aquatic life uses as FST; otherwise this reach of Crane Creek supports very diverse fish community and has above average aquatic habitat quality. A review of the field sheet from the September 1995 DNR stream use assessment, and the results of the September 1994 DNR biocriteria sampling near the same locations, suggests that the Class B(WW) aquatic life uses are fully supported due to (1) presence of a very diverse fish community (species/families: 1994, 26/6; 1995, 24/5) for streams in the Iowan Surface subcoregion (47c), including several environmentally sensitive species (American brook lamprey, rosyface shiner, northern hogsucker, black redhorse, rock bass, smallmouth bass, and banded darter), (2) presence of all, or nearly all the expected fish taxa (1994: 11 of 11; 1995, 10 of 11) for streams in this subregion, (3) presence of the expected game fish species (smallmouth bass), and (4) indications of above average habitat quality. Thus, in the absence of the threat of fish kills, this stream fully supports the Class B(WW) uses.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were assessed as "partially supported." Fish consumption uses remain "not assessed." EXPLANATION: The previous assessment of the Class B(WW) uses was based on results from (1) a DNR/UHL bioassessment in 1994 and a DNR stream use assessment survey in 1995 (see assessment developed for the 1998 report above). An updated interpretation of the results of the DNR/UHL biocriteria sampling of fish and benthic macroinvertebrates in 1994 continues to suggest that the aquatic life uses are "fully supported / threatened." That is, based on a comparison to results of ecoregion reference site sampling, the fish community was rated "good" (Fish IBI=57) and the benthic macroinvertebrate community was also rated "good" (MB IBI=64). These results suggest that the Class B(WW) uses are "fully supported / threatened." The current assessment of aquatic life uses, however, is based primarily on the occurrence of a fish kill during the most recent three-year period. As noted in the assessment developed for the 1998 report (above), a fish kill occurred on this reach of Crane Creek in September 1997. According to DNR's Section 305(b) assessment methodology, the occurrence of this pollution-caused fish kill within the last three years suggests that the aquatic life uses should be assessed as "partially supported." An additional, more recent kill occurred on August 28, 1998, on a tributary of this segment of Crane Creek. This kill was attributed to animal waste from a beef cattle feedlot; an estimated 11,534 fish were killed. This kill was apparently confined to the unnamed tributary and did not affect Crane Creek. Thus, although results of biological monitoring in 1994 and 1995 suggest only threats to the full support of the aquatic life uses, the recent occurrence of a fish kill in Crane Creek suggests an impairment of the Class B(WW) aquatic life uses. The fish consumption uses remain "not assessed" due to the lack of recent fish contaminant monitoring in this stream reach.

Rivers and Streams: Northeast Iowa River Basins

Turkey River Subbasin

CRANE CR

-- mouth to headwaters

Waterbody ID No.: IA 01-TRK-0440

Subsegment No.: 2

Subsegment Description: Spring Cr->trib S7,T99N,R13W, Howard Co.

Subsegment Length: 54 miles

ASSESSMENT COMMENTS: SUAs: Habscrs/fshscrs=1992, 24/11 (seine), 1995, 26/. 1994 Biocriteria: Fish IBI= 57(good), BM-IBI= 64(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates fairly good habitat quality. Diversity of substrates and several pool/riffle sequences observed. Isolated pasture impacts observed. A lot of beaver activity also noted. Fairly good diversity and abundances of fish species observed.

For the 1996 report: Added data from one stream assessment site and a biocriter. site in Howard County to make assessment.

For the 1998 report: Fish kill occurred in July 1997 3 mi NW of Saratoga; kill attributed to discharge of hog manure; an estimated 109,000 fish were killed. Continue to use the assessment of support of aquatic life uses developed for the 1996 report (=FST). A review of the field sheets from the June 1992 and September 1995 DNR stream use assessments, and results from the July 1994 DNR biocriteria sampling near Lourdes, support the assessment of the Class B(LR) aquatic life uses as FST due to (1) presence of very diverse fish communities (species/families, dstr->upstr: 25/5; 20/5; 13/4) for streams in the Iowan Surface subcoregion (47c), including several environmentally sensitive species (e.g., American brook lamprey, redbfin shiner, rosyface shiner, northern hogsucker, and banded darter), (2) presence of most of the expected fish taxa (dstr->upstr: 10 of 11; 8 of 11; 6 of 11) for streams in this subregion, and (3) indications of above average habitat quality due to diverse substrates, presence of pool/riffle sequences, and lack of significant impacts to the physcial characteristics of this stream. In the absence of the threat from fish kills, this reach of Crane Creek would fully support the Class B(LR) uses.

For the 2000 report, the assessment was based on data collected in 1994 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 57 (good) and the BM-IBI score was 64 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Northeast Iowa River Basins

Turkey River Subbasin

BASS CR

-- mouth to headwaters

Waterbody ID No.: IA 01-TRK-0450

Subsegment No.: 2

Subsegment Description: W line S3 to trib S4,T95N,R9W Fayette Co

Subsegment Length: 1.5 miles

ASSESSMENT COMMENTS: Assessment is based on DNR stream use assessment in October 1994.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of stream use assessment to assess aquatic life uses as FST due to (1) very high habitat score (31) compared to overall median score (22) for DNR stream use assessments, (2) very high fish score (14) for stream use assessments where seines are used to sample the fish community (75th percentile = 10), (3) comments on field sheet indicating that rocky substrates hindered seining effectiveness. One of the highest habitat scores of DNR stream use assessments conducted from 1990 through 1995; no impact to habitat quality suggested on field sheet.

For the 1998 report, used a review of the field sheet from the October 1994 DNR stream use assessment in Fayette County to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of a moderately diverse fish community (11 species from 3 families) for streams in the Driftless Area ecoregion (52), despite notes on field sheet indicating difficulty sampling fish from rock substrates, (2) presence of nearly all the expected fish taxa (8 of 9) for Class B(LR) streams in this region, and (3) indications of very high quality aquatic habitats and riparian corridor due to very diverse substrates, numerous pool/riffle sequences, and no impacts to the physical characteristics of this stream.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported." EXPLANATION: Continue to use the assessment of the Class B(WW) uses developed for the 1998 report (above); this assessment was based on results of the DNR stream use assessment conducted in October 1994. The results of the October 1994 stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

CHIALK CR

-- mouth to headwaters

Waterbody ID No.: IA 01-TRK-0470

Subsegment No.: 0

Subsegment Description: mouth to W line S36,T99N,R11W Howard Co.

Subsegment Length: 2.2 miles

ASSESSMENT COMMENTS: Assessment is based on survey of trout reproduction.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported." According to Moeller (1999), this reach of Chialk Creek is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of trout without stocking. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Rivers and Streams: Northeast Iowa River Basins

Upper Iowa River Subbasin

PAINT CR

-- mouth to headwaters

Waterbody ID No.: IA 01-UIA-0010

Subsegment No.: 1

Subsegment Description: mouth to confl. with L. Paint Cr.

Subsegment Length: 23 miles

ASSESSMENT COMMENTS: Biocriteria sampling conducted in S32,T97N,R3W in Yellow R. State Forest. 1994 Biocriteria: Fish IBI= 51(good), BM-IBI= 56(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of stream biocriteria sampling in September 1994 to assess aquatic life uses as FST due to relatively high number of fish species (20), high number of fish species intolerant of sediment/nutrient impacts (5), and due to above average habitat quality in the protected stream corridor in the Yellow River State Forest.

For the 1998 report, used a review of the results of the September 1994 DNR biocriteria sampling in Allamakee County to continue to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of a very diverse fish community (19 species from 8 families) including several environmentally sensitive species (e.g., longnose dace, rainbow trout, and mud darter), (2) presence of a majority of the expected fish taxa (6 of 9) for streams in the Driftless Area ecoregion (52), and indications of high quality aquatic habitats and riparian corridor. Despite the large number of species captured, a surprisingly low number of the expected number of fish taxa (6 of 9) were present. Possible explanations include influence of coldwater inputs to the stream limiting warmwater species, influence of sediment inputs or inputs of other pollutants higher up in the watershed. The only game fish species captured was rainbow trout.

For the 2000 report, the assessment was based on data collected in 1994 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 51 (good) and the BM-IBI score was 56 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Upper Iowa River Subbasin

LITTLE PAINT CR

-- mouth to headwaters

Waterbody ID No.: IA 01-UIA-0020

Subsegment No.: 0

Subsegment Description: mouth to N line S30,T97N,R3W Allamakee C

Subsegment Length: 1.9 miles

ASSESSMENT COMMENTS: Assessment based on a summary of trout reproduction; see attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1994 or 1996 reports.

For the 1998 report, used information from the October 1996 fact sheet on the Little Paint Creek Watershed Project (Allamakee County) to assessment of support of the Class B(CW) aquatic life uses as FST. According to the fact sheet, "the water quality and trout habitat in the stream have been negatively impacted by its agriculturally-based watershed. Eroded soil from cropland and streambanks, pesticides, and animal waste have entered and deteriorated Little Paint Creek." Due to lack of information on specific impacts from pesticides and animal waste, the majority of the impact was attributed to siltation impacts. A cooperative four-year project is underway to encourage farmers in the watershed to implement best management practices (BMPs) to reduce nonpoint source impacts on this stream. Objectives of the project include reduction of sediment delivery to the creek by 80%. This project is coordinated by the Allamakee and Clayton County Soil and Water Conservation Districts. For more information on the Little Paint Creek Watershed project, call 319/864-3999 or 319/568-2246.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the support of the Class B(CW) uses was changed from "fully supported / threatened" to "fully supported." According to Moeller (1999), this reach of Little Paint Creek is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of trout without stocking. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

ERICKSON SPRING BRANCH

-- mouth to headwaters

Waterbody ID No.: IA 01-UIA-0060

Subsegment No.: 0

Subsegment Description: mo. to W line S23,T98N,R4W Allamakee Co.

Subsegment Length: 1 miles

ASSESSMENT COMMENTS: Assessment based on summary of trout reproduction; see attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No informatin available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), this reach of Erickson Spring Branch is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Rivers and Streams: Northeast Iowa River Basins

Upper Iowa River Subbasin

CLEAR CR

-- mouth to headwaters

Waterbody ID No.: IA 01-UIA-0080

Subsegment No.: 0

Subsegment Description: mo. to W line S25,T99N,R4W Allamakee Co.

Subsegment Length: 3.8 miles

ASSESSMENT COMMENTS: Assessment based on summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported." According to Moeller (1999), Clear Creek is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of trout without stocking. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Rivers and Streams: Northeast Iowa River Basins

*Upper Iowa River Subbasin***UPPER IOWA R**

-- mouth to Lane's Bridge

Waterbody ID No.: IA 01-UIA-0090

Subsegment No.: 0

Subsegment Description: mouth to Lane's Bridge

Subsegment Length: 8.5 miles

ASSESSMENT COMMENTS: DNR monthly fixed monitoring station near New Albin; also monitored for fish tissue contaminants as part of 1991 and 1998 RAFT programs. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Assessed as PS for 1992 report due to 2 of 10 samples with FCB exceeding Class A criterion; also assessed for 1994 report due to 3 of 6 valid samples exceeding Class A criterion.

For 1996 report, had 6 of 13 samples (54%) that exceeded the Class A criterion for FC bacteria (=NS); no violations of other Class A or B criteria (=FS).

For 1998 report, used methods for assessing support of Class A (primary contact recreation) uses defined in EPA's 1998 Guidelines for Section 305(b) reporting: For the 13 samples collected, the geometric mean of 83 fecal coliforms per 100 ml and only 8% of samples > 400 fecal coliforms per 100 ml suggests that the Class A use is Fully Supported. Overall assessment considered fully supported/threatened due to known threats from agricultural nonpoint sources. No violations of Class B(WW) WQ quality criteria occurred in the 24 samples collected from the DNR fixed monitoring station near Dorchester during the 1996-97 period, thus suggesting full support of aquatic life uses. Additional monitoring is needed to determine the status of the aquataic communities and habitats of this reach of river.

For the 2000 report: SUMMARY: Class A (primary contact recreation) uses remain assessed as "fully supported." Class B(WW) aquatic life uses assessed as "fully supported." Fish consumption uses were assessed as "fully supported." EXPLANATION: The assessments of support of beneficial uses are based on results of DNR monthly water quality monitoring conducted on the Upper Iowa River near Dorchester during the 1998-1999 biennial period. The Class A (primary contact recreation) uses remain assessed as "fully supported." Of the 14 samples from this station analyzed for indicator bacteria (fecal coliforms) during summers of 1998 and 1999, five samples were collected during conditions of high river flow. These high flows resulted in monitoring at river discharges that exceeded the long-term monthly average flow plus one standard deviation of this average (flow statistics from Fischer et al. 1990). For purposes of Section 305(b) assessments, DNR uses the long-term average monthly flow plus one standard deviation of this average to identify river flows that are materially affected by surface runoff. According to the Iowa Water Quality Standards (IAC 1990:8), the water quality criterion for fecal coliform bacteria (200 orgs/100 ml) does not apply "when the waters are materially affected by surface runoff." The geometric mean of fecal coliform bacteria in the nine non-runoff-affected samples was 74 orgs/100 ml; one of the nine samples (11%) exceeded the EPA-recommended single-sample maximum value of 400 orgs/100 ml. The geometric mean (74 orgs/100 ml) is well below the state water quality criterion of 200 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting, if more than 10% of samples exceed the single-sample maximum value of 400 orgs/100 ml, the primary contact recreation uses are only "partially supported" (see pgs 3-33 to 3-35 of U.S. EPA 1997b). Due, however, to (1) the lack of sufficient data points for developing a "monitored" assessment (according to DNR's 305(b) assessment methodology, "monitored" assessments require at least 10 non-runoff-affected samples), and (2) the relatively low geometric mean, the Class A uses of this river reach were assessed as "fully supporting" for the 1998-1999 biennial period. Class B(WW) aquatic life uses were assessed as "fully supported" due to the lack of violations of state water quality criteria for pH, dissolved oxygen, and ammonia-nitrogen in the 24 samples during the 1998-1999 biennial period. In addition, no violations of Class B(WW) chronic criteria occurred in the one sample analyzed for toxic metals during the biennial period. The fish consumption uses were assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1998 near Dorchester. This monitoring showed that levels of all contaminants in the composite samples fillets from channel catfish and smallmouth bass were less than 1/2 of the respective FDA action levels and DNR levels of concern.

Rivers and Streams: Northeast Iowa River Basins

Upper Iowa River Subbasin

UPPER IOWA R

-- Canoe Cr. to Silver Cr.

Waterbody ID No.: IA 01-UIA-0110

Subsegment No.: 0

Subsegment Description: Canoe Cr. to Silver Cr.

Subsegment Length: 37 miles

ASSESSMENT COMMENTS: Sampled for the 1996 RAFT program (status monitoring).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1994 or 1996 reports.

For the 1998 report, used results of the 1996 RAFT status sampling near Freeport. Samples of all contaminants were below 1/2 of the FDA action levels in the composite samples of filets from carp and from smallmouth bass. No other information available for developing assessments of support of aquatic life or primary contact recreation uses.

For the 2000 report: SUMMARY: Both the Class A (primary contact recreation) uses and the Class B(WW) aquatic life uses remain "not assessed." the fish consumption uses remain assessed as "fully supported." EXPLANATION: : The Class A and Class B(WW) uses remain "not assessed" due to the lack of chemical or biological monitoring data for this river reach. The fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1996 (see assessment for the 1998 report above).

UPPER IOWA R

-- Silver Cr. to IA/MN state line

Waterbody ID No.: IA 01-UIA-0120

Subsegment No.: 3

Subsegment Description: River mile 86 to IA/MN state line

Subsegment Length: 55 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR stream use assessment in September 1995. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of stream use assessment to assess aquatic life uses as FST due to (1) habitat score (26) greater than the overall median habitat score (22) for DNR stream use assessments, (2) fish score (12) equal to the 75th percentile of all fish scores of assessments where electrofishing was used to sample the fish community (3) collection of 27 fish species during the assessment including smallmouth bass and Am. brook lamprey.

For the 1998 report, used a review of the field sheet from the September 1995 DNR stream use assessment near Chester to continue to assess support of the Class B(WW) uses as FST due to (1) presence of a very diverse fish community for Class B(WW) streams in the Iowan Surface subcoregion (47c), (2) presence of nearly all the expected fish taxa (9 of 11) for streams in this subregion, (3) presence of the expected game fish species (smallmouth bass), with both adults and juveniles present and (4) indications of above average habitat quality due to presence of diverse substrates and to lack of significant impacts to the physical characteristics of this stream reach.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses are assessed as "fully supported." The fish consumption uses remain "not assessed." EXPLANATION: Upon review of the assessment of support for the Class B(WW) uses developed for the 1998 report (see above), this assessment was upgraded to "fully supported" for the 2000 report. According to DNR's assessment methodology for Section 305(b) reporting, the results of the September 1995 DNR stream use assessment suggest "full support" of the Class B(WW) uses. The fish consumption uses remain "not assessed" due to the lack of recent fish tissue monitoring data for this river reach.

Rivers and Streams: Northeast Iowa River Basins

Upper Iowa River Subbasin**FRENCH CR**

-- mouth to headwaters

Waterbody ID No.: IA 01-U1A-0140

Subsegment No.: 0

Subsegment Description: mo. to E line S23,T99N,R5W Allamakee Co.

Subsegment Length: 5 miles

ASSESSMENT COMMENTS: Assessment is based on DNR biocriteria sampling, DNR summary of trout reproduction, and RAFT (fish tissue) monitoring in 1996 near Churchtown. See attached document for details..

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information in the March/April issue of the "Iowa Conservationist" (1996 Fishing Forecast) to assess this stream as FST. The following passage suggests that French Cr. is a high quality Iowa coldwater stream: "Entire stream has reproducing brown trout population."

For the 1998 report, upgraded the use assessment of support of aquatic life use from FST to "fully supporting. In addition, stream was monitored as part of RAFT fish tissue monitoring in 1996. All contaminants in the composite fillet samples of brown trout and white sucker were below 1/2 of the U.S. FDA action levels. The March/April 1998 Iowa Conservationist describes French Creek as having "high numbers of wild brown trout with increasing numbers of large fish." This information suggests full support of the Class B(CW) aquatic life uses.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses remain assessed as "fully supported." Fish consumption uses were assessed as "fully supported." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported." According to Moeller (1999), French Creek is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of trout without stocking. A November 1999 report prepared by the Hawkeye Fly Fishing Association alleges that water quality in portions of French Creek has recently been adversely affected by siltation of coarse substrates and by organic enrichment as expressed through excessive growth of filamentous algae. The source of these adverse impacts is believed to be farm fields used for land application of animal waste from a hog confinement facility. Although a recent (1999) DNR biological assessment suggests excellent water quality in French Creek, the evidence presented in the HFFA report suggests a potential "threat" to the full support of aquatic life uses in this high quality coldwater stream. See the following web site for more information on suspected water quality problems at French Creek: http://www.commonlink.com/hffa/News_Flash/FC-Pollution-report.html. Additional monitoring is needed to determine current water quality conditions in French Creek. Thus, DNR, in cooperation with the University of Iowa Hygienic Laboratory, plans to conduct periodic follow-up monitoring of benthic macroinvertebrates at French Creek to document the status of water quality. Fish consumption uses were assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1996 that showed very low levels of very few contaminants in the composite samples of filets from white sucker and brown trout. Levels of contaminants in both samples were far below 1/2 of the respective FDA action levels and DNR levels of concern.

BEAR CR

-- mouth to headwaters

Waterbody ID No.: IA 01-U1A-0170

Subsegment No.: 2

Subsegment Description: confluence with N. Bear Cr. (S25, T100N, R7W) to spring source (Mes

Subsegment Length: 16 miles

ASSESSMENT COMMENTS: Assessment based on occurrence of fish kill in August 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) aquatic life uses of this stream were assessed as "partially supported." EXPLANATION: A fish kill occurred on this stream reach on August 5, 1999, northwest of Highlandville in Winneshiek County. The kill followed a 2-3 inch rainfall event; no other water quality problems were observed. An estimated 3,200 fish were killed. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill, or kill of unknown origin, within the most recent three-year period indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the Class B(CW) aquatic life uses of this stream were assessed as "partially supported."

Rivers and Streams: Northeast Iowa River Basins

Upper Iowa River Subbasin

WATERLOO CR

-- mouth to headwaters

Waterbody ID No.: IA 01-UJA-0180

Subsegment No.: 0

Subsegment Description: mouth to IA/MN state line

Subsegment Length: 9.3 miles

ASSESSMENT COMMENTS: Assessment based on summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported." According to Moeller (1999), Waterloo Creek is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of trout without stocking. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

DUCK CR

--

Waterbody ID No.: IA 01-UJA-0185

Subsegment No.: 0

Subsegment Description: mouth (NE 1/4, S14, T100N, R6W, Allamakee Co.) to IA/MN state lin

Subsegment Length: 2 miles

ASSESSMENT COMMENTS: Assessment based on occurrence of fish kill in August 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

"General Use" waterbody. No information available; not assessed for the 1994, 1996 or 1998 reports.

For the 2000 report: SUMMARY: The general aquatic life uses of this stream were considered "partially supported." EXPLANATION: A fish kill occurred in this tributary of Waterloo Creek on August 28, 1998, near Dorchester in Allamakee County. The kill was attributed to runoff of animal waste. An estimated 1,650 fish were killed (1,625 sculpins (*Cottus* spp.) and 25 brown trout (*Salmo trutta*). According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the general aquatic life uses of this stream were assessed as "partially supported."

Rivers and Streams: Northeast Iowa River Basins

Upper Iowa River Subbasin**N BEAR CR**

-- mouth to state line

Waterbody ID No.: IA 01-UIA-0190

Subsegment No.: 0

Subsegment Description: mo (S25,T100N,R6W,Winneshiek)->st.line

Subsegment Length: 6.4 miles

ASSESSMENT COMMENTS: Assessment based on results of 1994 DNR biocriteria survey and summary of trout reproduction. See attached document for details.**SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:**

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Used data from one biocriteria site in Winneshiek County to make use support determination. Fish and habitat metrics from the stream use assessment protocol were applied to the data. Results indicate very good to excellent physical habitat quality. Fish community includes cold water species that indicate good water quality (i.e., mottled sculpin, slimy sculpin, brown trout).

For the 1998 report, continue to use the assessment of support of the Class B(CW) aquatic life uses developed for the 1996 report (=FST).

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the support of the Class B(CW) uses was changed from "fully supported / threatened" to "fully supported." According to Moeller (1999), North Bear Creek is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of trout without stocking. Assessment is also based on results of the 1994 DNR biocriteria sampling (see assessment for the 1996 report above). Based on results of the 1994 sampling, this waterbody probably should have been assessed as "fully supported" (not threatened). Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

M BEAR CR

-- mouth-Winneshiek to headwaters

Waterbody ID No.: IA 01-UIA-0200

Subsegment No.: 0

Subsegment Description: mo S14,T100N,R7W-> N line S16,T100N,R7W

Subsegment Length: 3.0 miles

ASSESSMENT COMMENTS: 1995 DNR biocriteria: habscr/fshscr = 29/11 (shock)**SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:**

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996 report: Used data from one biocriteria site in Winneshiek County to make use support determination. Fish and habitat metrics from the stream use assessment protocol were applied to the data. Data indicate very good physical habitat for small coldwater stream. Fish community included many species indicative of good water quality and cold water (i.e., rainbow trout and mottled sculpin).

For the 1998 report, continue to use the assessment of support of the Class B(CW) aquatic life uses developed for the 1996 report (=FST).

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

Rivers and Streams: Northeast Iowa River Basins

Upper Iowa River Subbasin

CANOE CR

-- mouth to headwaters

Waterbody ID No.: IA 01-UIA-0240

Subsegment No.: 1

Subsegment Description: mo. to Co. Rd W38 Winneshiek Co.

Subsegment Length: 24 miles

ASSESSMENT COMMENTS: 1994 SUA: habscr/fshscr: 31/14 (seine, 11 spp 4 fam) 1997 biocriteria: 27 spp., 7 fams. (shock); Fish IBI= 81(excellent), BM-IBI= 80(excellent)..

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of stream use assessment to assess aquatic life uses as FST due to (1) habitat score (31) well above the overall median score for DNR stream use assessments and (2) fish score (14) also well above the 75th percentile of assessments of the fish community made with seines. Information on field sheet indicates no alterations to riparian or instream habitat conditions.

For the 1998 report, used results of the September 1997 DNR biocriteria sampling NE of Decorah to update the assessment of support of the Class B(WW) aquatic life uses. Used these results to upgrade the assessment of support of the Class B(WW) uses from FST to FS due to (1) presence of a very diverse fish community (27 species from 7 families) including sensitive species (e.g., gravel chub, rosyface shiner, black redbhorse, brown trout, smallmouth bass, and rainbow darter), (2) presence of nearly all the expected fish taxa (8 of 9) for streams in the Driftless Area ecoregion, (3) presence of the the expected game fish species (i.e., smallmouth bass; also brown trout), and (4) lack of violations of Class B(WW) WQ criteria in the sample collected during biocriteria sampling.

For the 2000 report, the assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 81 (excellent) and the BM-IBI score was 80 (excellent). The aquatic life use support was assessed as fully supported (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Upper Iowa River Subbasin

PINE CR -- mouth to headwaters
Subsegment No.: 0 Subsegment Description: mouth to N line S21,T99N,R7W Winneshiek

Waterbody ID No.: IA 01-UIA-0250

Subsegment Length: 2.8 miles

ASSESSMENT COMMENTS: Assessment based on summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1994 or 1996 reports.

For the 1998 report, used information from the "Fishing Forecast" in the March/April 1998 Iowa Conservationist. This stream is identified as having "very strong numbers of naturally reproducing, vividly colored brook trout." The presence of a naturally reproducing population of brook trout in Iowa suggests exceptionally high water quality and habitat quality.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses remain assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Based on the assessment developed for the 1998 report (above), and based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses remain assessed as "fully supported." According to Moeller (1999), Pine Creek is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of brook trout without stocking. For additional information on brook trout populations in South Pine Creek, see the September/October 1998 issue of the "Iowa Conservationist." Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

COON CR -- mouth to headwaters
Subsegment No.: 0 Subsegment Description: mo. to rd in S13,T98N,R7W, Winneshiek Co

Waterbody ID No.: IA 01-UIA-0270

Subsegment Length: 3.2 miles

ASSESSMENT COMMENTS: Assessment based on summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), Coon Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Upper Iowa River Subbasin

TROUT R

-- mouth-Winneshiek to headwaters

Waterbody ID No.: IA 01-UIA-0290

Subsegment No.: 0

Subsegment Description: mouth (S9,T98N,R7W, Winneshiek Co.) to Smith Cr (S21,T98N,R7W

Subsegment Length: 3.4 miles

ASSESSMENT COMMENTS: Assessment is based on summary of trout reproduction and 1996 biocriteria sampling site data. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), Trout River is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

TROUT CR

-- mouth to headwaters

Waterbody ID No.: IA 01-UIA-0300

Subsegment No.: 1

Subsegment Description: mo. to trib in S27,T98N,R8W Winneshiek C

Subsegment Length: 3.6 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish / benthic macroinvertebrate monitoring in 1998 and 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, use information in March/April issue of the Iowa Conservationist (1996 Fishing Forecast) to assess aquatic life uses as FST. Iowa Conservationist states that stream supports a put-and-take trout fishery.

For the 1998 report, used information from stream assessments conducted in 1992 by DNR and in 1995 by DNR/UHL, as well as information from a summary of the ongoing CWA Section 319 water quality project, to downgrade the assessment of support of the Class B(CW) aquatic life uses from FST to PS due to impacts from streambank erosion, channel sedimentation, and potential organic enrichment due to nutrient contributions from livestock and other nonpoint sources. See the 1998 assessment developed for the Class B(LR) reach (Waterbody IA 01-UIA-0300-2) for additional information. For more information on the Trout Run Water Protection Project, call 319/382-4352.

For the 2000 report: SUMMARY: The Class B(CW) aquatic life uses were assessed as "fully supporting / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: The support of the Class B(CW) [coldwater] aquatic life uses was upgraded from "partially supported" to "fully supported / threatened" based on results of biological monitoring (fish and benthic macroinvertebrates) conducted from 1997 through 1998 by the University of Iowa Hygienic Laboratory (see UHL 1999). These studies show that water quality in this stream reach (site TR1) was rated as "very good" in 1998 and 1999 based on the Hilsenhoff Biotic Index. Although these studies have been conducted to document changes in water quality in response to improved watershed management practices, this connection has not been demonstrated in the project thus far, with annual changes in fish populations and benthic macroinvertebrate populations more likely a response to variations in precipitation, runoff, stream flow, temperature, and other climate-related factors (see UHL 1999). Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring in this stream reach."

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Upper Iowa River Subbasin

TROUT CR

-- mouth to headwaters

Waterbody ID No.: IA 01-UIA-0300

Subsegment No.: 2

Subsegment Description: trib S27,T98N,R8W to trib S33,T98N,R8W

Subsegment Length: 3.6 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish / benthic macroinvertebrate monitoring in 1998 and 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates below avg. habitat quality. Frequent pasture use impacts which include frequent bank erosion were observed. Few pool/riffle sequences and much livestock (dairy cattle) waste noted. Fair diversity of fish species observed. Some of stream too shallow and rocky to seine.

For 1996 report, use combine results of 1992 stream use assessment with those of assessment in spring 1995 to support the 1994 assessment of aquatic life uses as PS. Assessment in 1995 showed severe stream bank erosion in S33,T98N,R8W. Substrates unconsolidated in some reaches suggesting sediment overload.

For the 1998 report, used a reivew of the field sheet from the May 1992 DNR stream use assessment and the results of the May 1995 DNR/UHL stream survey to continue to assess support of the Class B(LR) aquatic life uses as "partially supported" due to indications of severe stream bank erosion and sediment overload in the stream channel. This stream reach has been recently monitored, and nonpoint management practices have been implemented in the watershed, as part of CWA Section 319 water quality project. The goals of the project include reduction of the amount of sediment, nutrients, animal manure, and pesiticides entering water supplies by helping watershed landowners and farmers implement soil conservation and water quality practices. Some water quality improvement has been noted. For more information on the Trout Run Water Protection Project, call 319/382-4352.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "fully supporting / threatened." EXPLANATION: The support of the Class B(LR) aquatic life uses was upgraded from "partially supported" to "fully supported / threatened" based on results of biological monitoring (fish and benthic macroinvertebrates) conducted from 1997 through 1998 by the University of Iowa Hygienic Laboratory (see UHL 1999). Based on the Hilsenhoff Biotic Index, these studies showed that water quality in the upper (general use) reaches of this Class B(LR) stream reach (sites TR2 and TR3) was rated as "good" in 1997 and 1998, with only a slight (and probably not significant) decrease in water quality noted in 1999. Based on the characterization of water quality as "good," and based on the suggestion of a least some level of organic pollution, the Class B(LR) aquatic life uses were assessed as "fully supported / threatened." In addition, improved water quality is suggested by the cessation of grazing along portions of east branch of Trout Creek (site TR3) and the resultant increase in streambank stability and decrease in the percentage of silt substrates. Although these studies have been conducted to document changes in water quality in response to improved watershed management practices, this connection has not been demonstrated in the project thus far, with annual changes in fish populations and benthic macroinvertebrate populations more likely a response to variations in precipitation, runoff, stream flow, temperature, and other climate-related factors (see UHL 1999).

DRY RUN

-- mouth to headwaters

Waterbody ID No.: IA 01-UIA-0320

Subsegment No.: 0

Subsegment Description: mo. to W line S36,T98N,R9W Winneshiek Co

Subsegment Length: 4.9 miles

ASSESSMENT COMMENTS: Assessment based on occurrence of fish kill in August 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "partially supported." Fish consumption uses remained "not assessed." EXPLANATION: A fish kill occurred on Dry Run Creek southwest of Decorah in Winneshiek County on August 24, 1998. The kill was attributed to discharge of manure from a dairy operation; an estimated 12,400 fish were killed. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the assessment of support of the Class B(CW) aquatic life uses was changed from "not assessed" to "partially supported." Fish consumption uses remained "not assessed" due to lack of fish tissue monitoring in this stream reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Upper Iowa River Subbasin

COLD WATER CR

-- mouth to headwaters

Waterbody ID No.: IA 01-UIA-0390

Subsegment No.: 0

Subsegment Description: mo to N line S31,T100N,R9W Winneshiek Co

Subsegment Length: 2.5 miles

ASSESSMENT COMMENTS: Assessment is based on results from 1995 DNR biocriteria sampling and 1999 summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Used data from one 1995 biocriteria site in Winneshiek County to make use support determination. Fish and habitat metrics from the stream use assessment protocol were applied to the data. Results indicate very good physical habitat quality. Fish were fairly abundant and included coldwater species such as longnose dace and rainbow trout. Fisheries biologists suspect there is successful reproduction occurring in the stream.

For the 1998 report, continued to use the assessment of support of the Class B(CW) aquatic life uses developed for the 1996 report (=FST).

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on results of the 1995 DNR biocriteria sampling (see above), and based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), Coldwater Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

BIGALKS CR

-- mouth to headwaters

Waterbody ID No.: IA 01-UIA-0410

Subsegment No.: 0

Subsegment Description: mo. to W line S23,T100N,R11W Howard Co.

Subsegment Length: 4.2 miles

ASSESSMENT COMMENTS: Assessment is based on summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information gathered as part of Section 319 stream corridor protection project during the years 1991 and 1992. Based on results of sampling for aquatic life and on results of habitat assessment, assess the aquatic life uses as FST.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), Bigalks Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Recent water quality improvements at Bigalks Creek have resulted from a private/state/federal cooperative project in the watershed of Bigalks Creek. Implementation of riparian buffers, filter strips, livestock fencing, and streambank stabilization has improved both water quality and the quality of aquatic habitats in Bigalks Creek. Recent (1999) fish surveys have shown a large increase in the number of trout supported in this stream and have documented natural reproduction of rainbow trout. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Rivers and Streams: Northeast Iowa River Basins

*Volga River Subbasin***VOLGA R**

-- mouth to Brush Creek

Waterbody ID No.: IA 01-VOL-0010

Subsegment No.: 1

Subsegment Description: mouth to bridge crossing in Volga

Subsegment Length: 37 miles

ASSESSMENT COMMENTS: Assessment is based on results from DNR monthly monitoring station near Elkport, Clayton County. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Fully
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, Class A use was assessed as PS due to 2 of 9 valid samples with FC bacteria > Class A WQC (22% violation = PS).

For 1994 report, levels of FC bacteria in 3 of 6 non-runoff samples exceeded the Class A WQC. Data are too few to meet completeness criteria; thus, even with 50% violation, assess as PS.

For 1996 report, had one violation of chronic criterion for NH₃-N in 36 samples over three years (=FST); had 7 of 14 non-runoff samples that exceeded the Class A WQC for fecal coliform bacteria; thus primary contact recreation uses should be assessed as NS.

For the 1998 report, had no violations of Class B(WW) water quality criteria in the 24 samples collected during the 1996-97 period; thus, assess support of Class B (aquatic life) uses as FST due to known threats from agricultural nonpoint sources. Assessed support of Class A (primary contact recreation) uses as NS due to a geometric mean of the 13 samples of fecal coliform bacteria of 401 (i.e., greater than the WQS of 200 fecal coliforms per 100 ml), and levels of fecal coliforms in 31 % of the samples exceeded 400 fecal coliforms per 100 ml (i.e., greater than 10% of samples as identified in EPA guidelines for Section 305(b) reporting). The March/April 1998 Iowa Conservationist identifies this reach of the Volga River as providing good angling opportunities for smallmouth bass.

For the 2000 report: SUMMARY: Class A (primary contact recreation) uses remain assessed as "not supported." The Class B(WW) aquatic life uses are assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: The assessments of support of beneficial uses are based on results of DNR monthly water quality monitoring conducted on the Volga River near Elkport during the 1998-1999 biennial period. The Class A (primary contact recreation) uses remain assessed as "not supported." All 14 samples from this station that were analyzed for indicator bacteria (fecal coliforms) during summers of 1998 and 1999 were collected at conditions of normal to low flow (i.e., the river was not materially affected by surface runoff). For purposes of Section 305(b) assessments, DNR uses the long-term average monthly flow plus one standard deviation of this average to identify river flows that are materially affected by surface runoff. According to the Iowa Water Quality Standards (IAC 1990:8), the water quality criterion for fecal coliform bacteria (200 orgs/100 ml) does not apply "when the waters are materially affected by surface runoff." The geometric mean of fecal coliform bacteria in the 14 non-runoff-affected samples was 657 orgs/100 ml, with seven samples (50%) exceeding the EPA-recommended single-sample maximum value of 400 orgs/100 ml. The geometric mean (657 orgs/100 ml) is more than three times the state water quality criterion of 200 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting, if the geometric mean is greater than 200 orgs/100 ml., the primary contact recreation uses are "not supported" (see pgs 3-33 to 3-35 of U.S. EPA 1997b). This river reach has a history of high levels of indicator bacteria, with assessments of either "partial support" or "nonsupport" of the Class A uses made since the 1992 report (see above). The Class B(WW) aquatic life uses were assessed as "fully supported" due to the lack of violations of state water quality criteria for pH, dissolved oxygen, and ammonia-nitrogen in the 24 samples during the 1998-1999 biennial period. In addition, no violations of Class B(WW) chronic criteria occurred in the two samples analyzed for toxic metals during the biennial period. The fish consumption uses remain "not assessed" due to the lack of recent fish tissue monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Volga River Subbasin

VOLGA R

-- mouth to Brush Creek

Waterbody ID No.: IA 01-VOL-0010

Subsegment No.: 2

Subsegment Description: bridge crossing in Volga to Brush Cr.

Subsegment Length: 37 miles

ASSESSMENT COMMENTS: DNR monthly monitoring station. March/April 1998 Iowa Conservationist.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, assessed as FS due to absence of violation of Class B(WW) WQC.

For 1994 report, also had no violations of Class B(WW) criteria, but assessed as FST due to known threats from AG NPS.

For 1996 report, had 1 violation of the chronic criterion for ammonia: March 8, 1993, 2.4 mg/l ammonia-N > chronic criterion of 1.85 (temp=1.0C; pH=8.1). 305(b) guidelines allow 1 exceedance [sic] of acute or chronic criteria in a three-year period for fully supporting waters. No other violations of Iowa water quality criteria.

For 1998 report, had no violations of Class B water quality criteria in the 24 samples collected during the 1996-97 period. Thus, assess support of Class B (aquatic life) uses as FST due to known threats from agricultural nonpoint sources. The March/April Iowa Conservationist identifies this reach of the Volga River as providing good angling opportunities for smallmouth bass.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses are assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: The assessments of support of beneficial uses are based on results of DNR monthly water quality monitoring conducted on the Volga River near Elkport during the 1998-1999 biennial period. The Class B(WW) aquatic life uses were assessed as "fully supported" due to the lack of violations of state water quality criteria for pH, dissolved oxygen, and ammonia-nitrogen in the 24 samples during the 1998-1999 biennial period. In addition, no violations of Class B(WW) chronic criteria occurred in the two samples analyzed for toxic metals during the biennial period. The fish consumption uses remain "not assessed" due to the lack of recent fish tissue monitoring in this river reach.

VOLGA R

-- Brush Crk. to headwaters

Waterbody ID No.: IA 01-VOL-0020

Subsegment No.: 3

Subsegment Description: L. Volga Rvr. to unn. trib. Fayette Co.

Subsegment Length: 34 miles

ASSESSMENT COMMENTS: 1992 SUA: Habschr/fshscr=23/12 (seine, 12 spp, 4 fams). 1995 Biocriteria: Fish IBI= 84(excellent), BM-IBI= 90(excellent).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates fairly good habitat quality. Diverse substr. types and several pool/riffle sequences observed. Good average depth in reach assessed. Frequent pasture use impacts and channelization noted. Fair diversity and abundances of fish species observed. Pasture use and channeliz. are threats to integrity of aquatic community. 1996: Used data from 1995 biocriteria sampling site in Fayette County. Fish and habitat metrics from stream use assessment protocol were applied to the data to make use support determination. Generally very good habitat and fish community. For the 1998 report, used a review of the May 1992 DNR stream use assessment, and the September 1995 DNR biocriteria sampling in Fayette County to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of a very diverse fish community (26 species from 5 families (1995 biocriteria)) for streams in the Iowan Surface subecoregion, (2) presence of nearly all the expected fish taxa (11 of 12) for streams in this subregion, (3) presence of several sensitive species, including largescale stoneroller, Ozark minnow, rosyface shiner, northern hogsucker, black redhorse, smallmouth bass, rainbow darter, and banded darter, and (4) indications of above average habitat quality.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Volga River Subbasin

BEAR CR

-- mouth to headwaters

Waterbody ID No.: IA 01-VOL-0030

Subsegment No.: 2

Subsegment Description: S In S18 to W In S23,T91N,R4W Clayton Co

Subsegment Length: 11 miles

ASSESSMENT COMMENTS: Assessment based on summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1994, 1996, or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), Bear Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

MOSSEY GLEN CR

-- mouth to headwaters

Waterbody ID No.: IA 01-VOL-0060

Subsegment No.: 0

Subsegment Description: mouth to S In S10,T91N,R5W Clayton Co.

Subsegment Length: 2 miles

ASSESSMENT COMMENTS: Assessment based on summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), Mossey Glen Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Rivers and Streams: Northeast Iowa River Basins

Volga River Subbasin

KLEINLEIN CR

-- mouth to headwaters

Waterbody ID No.: IA 01-VOL-0080

Subsegment No.: 0

Subsegment Description: mouth to spring, S10,T91N,R6W Clayton Co

Subsegment Length: 3.9 miles

ASSESSMENT COMMENTS: Assessment is based on DNR summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported." According to Moeller (1999), Kleinlein Creek is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of trout without stocking. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

ENSIGN CR

-- mouth to headwaters

Waterbody ID No.: IA 01-VOL-0100

Subsegment No.: 0

Subsegment Description: mouth to spring S29,T92N,R6W Clayton Co.

Subsegment Length: 1.0 miles

ASSESSMENT COMMENTS: Assessment is based on DNR summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported." According to Moeller (1999), Ensign Creek is in the category of Iowa trout streams with long-term, consistent natural reproduction; these streams are capable of maintaining a viable population of trout without stocking. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Volga River Subbasin

GRANNIS CR

-- mouth to headwaters

Waterbody ID No.: IA 01-VOL-0140

Subsegment No.: 0

Subsegment Description: mouth to W in S36,T93N,R8W Fayette Co.

Subsegment Length: 3.5 miles

ASSESSMENT COMMENTS: Assessment based on DNR summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), Grannis Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Rivers and Streams: Northeast Iowa River Basins

*Wapsipinicon River Subbasin***WAPSIPINICON R**

-- mouth to Buffalo Creek

Waterbody ID No.: IA 01-WPS-0010

Subsegment No.: 0

Subsegment Description: mouth to Buffalo Creek near Anamosa (partial segment)

Subsegment Length: 95 miles

ASSESSMENT COMMENTS:

Assessment is based on results from DNR quarterly station N. of Olin, NAWQA fish tissue and water quality monitoring near DeWitt, and RAFT (fish tissue monitoring) site north of Donahue (Scott Co.). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Fully
Fish Consumption	-- Threatened	Primary Contact (Recr)	-- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used limited monitoring data from DNR quarterly monitoring station north of Olin to assess aquatic life uses as FST and primary contact recreation uses as PS. Monitoring results show only 1 violation of Class B water quality criteria (pH) in 7 samplings in 1994. Two of three samples, however, exceeded the Class A WQ criterion for fecal coliform bacteria; thus, use best professional judgement to assess Class A uses as PS.

For the 1998 report, no assessment of Class A primary contact uses: insufficient data; continued to use assessment of Class B(WW) uses (=FST) developed for the 1996 report. Used results of RAFT trend monitoring near Grand Mound in 1994 and 1996 to assess support of fish consumption uses as FS: levels of all contaminants were less than 1/2 of FDA action levels in both the 1994 and 1996 composite samples of whole-fish carp. As part of the USGS National Water Quality Assessment (NAWQA) program in the eastern Iowa river basin study area, fish tissue monitoring was conducted in the Wapsipinicon R. near DeWitt in September 1995. The composite sample of whole-fish carp contained detectable levels of several organochlorine contaminants, including chlordane, dieldrin, DDT and PCBs. All levels of these contaminants were less than 1/2 the respective FDA action levels, thus suggesting full support (=FS) of fish consumption uses. See USGS Fact Sheet FS-027-97 (March 1997) for more information.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "partially supported." The Class B(WW) aquatic life were assessed as "fully supported." Fish consumption uses were assessed as "fully supported / threatened." EXPLANATION: The assessments of support of the Class A and Class B(WW) beneficial uses are based on results of (1) DNR quarterly water quality monitoring conducted on the Wapsipinicon River near DeWitt during the 1998-1999 biennial period (October 1997 through September 1999) and (2) USGS monitoring near DeWitt from March 1996 through September 1998 as part of their National Water Quality Assessment (NAWQA) program monitoring in the eastern Iowa river basins study unit (station 05422000). Data from the DNR quarterly monitoring station near Olin (station 300520) were last collected from October 1993 through September 1995 and are thus considered too old (greater than five years) for characterizing current water quality conditions. The Class A uses were assessed as "partially supported" Results of USGS/NAWQA monitoring in 1996 showed that the geometric mean level of indicator bacteria (fecal coliforms) in the 5 non-runoff-affected samples (154 orgs/100ml) was less than the Iowa Class A water quality criterion of 200 orgs/100ml. For purposes of Section 305(b) assessments, DNR uses the long-term average monthly flow plus one standard deviation of this average to identify river flows that are materially affected by surface runoff. According to the Iowa Water Quality Standards (IAC 1990:8), the water quality criterion for fecal coliform bacteria (200 orgs/100 ml) does not apply "when the waters are materially affected by surface runoff." One of the five samples (20%) exceeded the U.S. EPA-recommended single-sample maximum value of 400 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting, if more than 10% of samples exceed the single-sample maximum value of 400 orgs/100 ml, the primary contact recreation uses are only "partially supported" (see pgs 3-33 to 3-35 of U.S. EPA 1997b). Due, however, to (1) the lack of sufficient data points for developing a "monitored" assessment (according to DNR's 305(b) assessment methodology, "monitored" assessments require at least 10 non-runoff-affected samples), and (2) the relatively low geometric mean, the Class A uses of this river reach would have been assessed (evaluated) as "fully supporting" for the 1996 assessment. DNR quarterly monitoring near DeWitt during the 1998-1999 biennial period, however, showed that the geometric mean of the five non-flow-affected samples (255 orgs/100 ml) was greater than the Iowa Class A water quality criterion of 200 orgs/100 ml; in addition, one of the five samples (20%) exceeded the U.S. EPA-recommended single-sample maximum value of 400 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting, if the geometric mean exceeds 200 orgs/100 ml, the primary contact recreation uses are "not supported" (see pgs 3-33 to 3-35 of U.S. EPA 1997b). Because less than DNR-required 10 non-runoff-affected samples were collected during the 1998-1999 biennial period, the Class A uses were assessed (evaluated) as "partially supported." The Class B(WW) aquatic life uses were assessed as "fully supported" due to (1) the lack of violations of Iowa Class B(WW) water quality criteria for pH, dissolved oxygen, and ammonia-nitrogen in the 35 samples collected from March 1996 to September 1998 as part of the USGS/NAWQA monitoring and in the 8 samples collected during the 1998-1999 biennial period as part of DNR quarterly monitoring, (2) the lack of violations of Iowa Class B(WW) water quality criteria for toxic organic compounds and pesticides in the 22 samples collected from March 1996 to September 1998 as part of USGS/NAWQA monitoring, and (3) the lack of violations of Class B(WW) water quality criteria in the 2 samples analyzed for toxic metals during the 1998-1999 biennial period as part of DNR quarterly monitoring. This assessment was based, in part, on results of quarterly monitoring. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the DeWitt station began in October 1999. Fish consumption uses were assessed as "fully supported / threatened." EPA/DNR fish tissue (RAFT) monitoring in 1998 north of Donahue in Scott County showed that composite samples of whole-fish common carp contained 0.18 ppm of technical chlordane. This level is identical to the level of technical chlordane (0.18 ppm) in the sample of whole-fish carp from this station. Although levels of organochlorine contaminants in whole-fish samples tend to overestimate levels in the edible portion of the fish, these levels of chlordane suggest

Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

that levels in edible portions may be greater than 1/2 of the FDA action level (0.30 ppm) for chlordane. Thus, according to DNR's assessment methodology, the fish consumption uses should be assessed as "fully supported / threatened." Additional whole-fish carp samples will be collected and analyzed from this stations as part of the 2000 RAFT program.

WAPSIPINICON R

-- Buffalo Cr to L Wapsi R-Chick.

Waterbody ID No.: IA 01-WPS-0020

Subsegment No.: 1

Subsegment Description: Buffalo Cr (Jones Co.) to Snyder Access, Bremer Co.

Subsegment Length: 130 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue monitoring in 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used monitoring data from the DNR quarterly monitoring station near Independence (443704) to assess support of aquatic life and primary contact recreation uses as FST. Monitoring data for 9 samplings show no violations of Class B water quality criteria; sampling for fecal coliform bacteria on six occasions in summers of 1994 and 1995 show only one minor violation (230 orgs./100ml) of the Class A WQ criterion (200 orgs./100ml) (three of the six samples were affected by surface runoff). Thus, assess support of primary contact recreation as FST. The 1996 Fishing Forecast in the March/April "Iowa Conservationist" describes the Wapsipinicon in Buchanan Co. as providing good fishing for channel catfish, smallmouth bass, and walleye. Fishing for northern pike upstream from Independence through Black Hawk and Bremer counties is reported as "excellent."

For the 1998 report, used the assessments of support of the Class A primary contact (=FST) and Class B(WW) aquatic life uses (=FST) developed for the 1996 report. A fish kill occurred on the river at Independence in December 1997; no cause or source of the fish kill was determined.

For the 2000 report: **SUMMARY:** The Class A (primary contact recreation) uses and the Class B(WW) aquatic life uses are considered "not assessed." Fish consumption uses were assessed as "fully supported."
EXPLANATION: The assessment of support of the Class A and Class B(WW) uses developed for previous reports (see above) were based, in part, on results of DNR quarterly water quality monitoring at Independence (station 443704). Data from this station, however, were last collected from October 1993 through September 1995 and are thus considered too old (greater than five years) for characterizing current water quality conditions. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Independence station began in October 1999. Results from this monitoring will allow development of an updated assessment of support of beneficial uses for the 2002 report. Fish consumption uses were assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1998 near Viola in Linn County. This monitoring showed that (1) relatively few contaminants were detected and that (2) levels of all detected contaminants were well-below 1/2 of the respective FDA action levels and DNR levels of concern in the composite samples of fillets from carp and smallmouth bass. These results suggest that the fish consumption uses are "fully supported."

Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

WAPSIPINICON R

-- Buffalo Cr to L Wapsi R-Chick.

Waterbody ID No.: IA 01-WPS-0020

Subsegment No.: 2

Subsegment Description: Snyder Access (Bremer Co.) to L. Wapsi R, Chickasaw C

Subsegment Length: 130 miles

ASSESSMENT COMMENTS: Assessment is based on results of USGS monitoring of fish tissue and water quality near Tripoli. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1994 or 1996 reports.

For 1998 report, used results of fish tissue monitoring conducted for the USGS National Water Quality Assessment (NAWQA) program in the eastern Iowa river basins study area in September 1995. The whole fish composite sample of white sucker was analyzed for several organochlorine compounds, including chlordane, dieldrin, DDT and PCBs. Levels of these contaminants in the composite sample were relatively low compared to the other 15 sites in the study. Thus, assess support of fish consumption uses as FS. See USGS Fact Sheet FS-027-97 (March 1997) for more information. Information from the March/April Iowa Conservationst suggests that the Class B(WW) aquatic life uses are fully supported; i.e., this reach is identified as providing good angling opportunities for northern pike. Additional information, however, is needed on the status of the aquatic communities of this river reach in order to develop an accurate assessment of support of the Class B(WW) uses.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were assessed as "fully supported;" the fish consumption uses remain assessed as "fully supported." EXPLANATION: Results of monitoring conducted on the Wapsipinicon River near Tripoli from March 1996 to September 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05420680) showed (1) no violations of Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen in the 36 samples collected and (2) no violations of Class B(WW) criteria for toxic organic compounds or pesticides in the 22 samples analyzed. This lack of violations suggests "full support" of the Class B(WW) aquatic life uses. Fish consumption uses remain assessed as "fully supported" based on results of the USGS/NAWQA fish tissue monitoring in September 1995 that showed levels of organochlorine contaminants in the composite sample of whole fish white sucker was less than 1/2 of the respective FDA action levels and DNR levels of concern (see assessment for the 1998 report above).

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Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

WAPSIPINICON R

-- L. Wapsi. Rvr. to state line

Waterbody ID No.: IA 01-WPS-0030

Subsegment No.: 1

Subsegment Description: L. Wapsi. Rvr. to confl. w/ Watsons Cr.

Subsegment Length: 53 miles

ASSESSMENT COMMENTS: Habscr/fshscr=30/12, 30/12, 27/12 (shock), stream assmt. sites; 29/11 (shock), biocriteria site. 1994 Biocriteria: Fish IBI= 39(fair), BM-IBI= 79(very good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996 report: Used data from 3 stream use assessment sites and 1 biocriteria sampling site to make use support determination. Assessment forms indicate very good habitat quality at all locations evaluated. The moderate diversity of fish and relative low numbers of fish at all sites is somewhat perplexing given the above average quality of habitat.

For the 1998 report, used a reiew of the field sheets from the two August 1995 and the one September 1995 DNR stream use assessments in Chickasaw, Howard & Mitchell counties, as well as the results of the September 1994 DNR biocriteria sampling in Chickasaw County to continue to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of diverse fish communities at all four sample locations (dstr->upstr: species/ families: 18/5, 13/4, 15/5, and 17/4), (2) presence of a majority, or nearly all, of the expected fish taxa (dstr->upstr: 8 of 11; 9 of 11; 10 of 11; & 10 of 11) at all sample sites for streams in the Iowan Surface subcoregion, and (3) indications of excellent aquatic habitats at all sample locations with above average low flow characteristics, diverse substrates, good habitat diversity (although riffles were relatively few), and lack of significant impacts to the physical characteristics of the stream from channel alterations or streambank erosion. Although the results of the stream assessments and biocriteria sampling suggest a high quality stream reach, the Class B(WW) uses were assessed as FST due to the lack of the expected game fish. Presence of deep water at some locations may have prevented capture of game fish species. Additional monitoring is needed to better determine the status of game fish populations in this reach of the Wapsipinicon River.

For the 2000 report, the assessment was based on data collected in 1994 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 39 (fair) and the BM-IBI score was 79 (very good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

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Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

LOST CR

-- mouth to headwaters

Waterbody ID No.: IA 01-WPS-0040

Subsegment No.: 0

Subsegment Description: mouth to trib, S7,T79N,R5E, Scott Co.

Subsegment Length: 17 miles

ASSESSMENT COMMENTS: 1991 SUA: habscr/fshscr=22/11 (seine). 1998 Biocriteria: Fish IBI= 48(fair), BM-IBI= 53(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates fair habitat quality for small streams in this region. Little substr. diversity and few pool/riffle sequences observed. Isolated pasture use channel alterations noted. Poor low flow characteristics. Rel. low diversity of fish observed, sores observed on larger creek chubs and white suckers.

For 1996 report, changed 1994 assessment of aquatic life uses from PS to FST for the following reasons: (1) habitat score (22) equals the overall median habitat score for DNR stream use assessments, (2) field sheet indicates only isolated channel alterations and "some" erosion of stream banks (vs. "frequent" or "extensive"), (3) fish score (11) exceeds the 75th percentile for assessments made with seines, (4) field notes indicated rel. permanent pools due to hardpan. Comments regarding "sores on larger creek chubs and white suckers" does suggest a potential WQ problem, but most other information suggests a relatively non-impaired stream reach.

For the 1998 report, used a review of the field sheet from the August 1991 DNR stream use assessment in Scott County to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a majority of the expected fish taxa (5 of 9) for streams in the Mississippi River basin portion of the Southern Rolling Loess Prairies subecoregion and (2) indications of approximately average quality aquatic habitats, with no significant impacts to the physical characteristics of the stream noted. The data upon which this assessment is based are more than 5 years old. Additional monitoring is needed to update this assessment and to determine the status of the aquatic communities and habitats. Special attention should be given to evaluating the fish community for disease/health problems.

For the 2000 report, the assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 48 (fair) and the BM-IBI score was 53 (fair). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

BROPHY CR

-- mouth to headwaters

Waterbody ID No.: IA 01-WPS-0050

Subsegment No.: 1

Subsegment Description: mouth to Cherry Cr, Clinton Co.

Subsegment Length: 8.8 miles

ASSESSMENT COMMENTS: Assessment is based on a September 1997 fish survey by DNR biologist Don Kline. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1996 report.

For the 1998 report, used a review of results of a September 1997 fish survey by the DNR Fisheries Bureau to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of a diverse fish community (16 species from 7 families) for streams in the Southern Iowa Rolling Loess Prairies (47f) subcoregion, (2) presence of a majority of the expected fish taxa (7 of 9) for streams in this subregion, (3) and presence of game fish species (largemouth bass). Species present are probably more typical of ecoregion 72 (Interior River Lowlands) than subcoregion 47c due to presence of grass pickerel and central mudminnow.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported / threatened" (minor impacts). The fish consumption uses remain "not assessed." EXPLANATION: Continue to use the assessment of the Class B(WW) uses developed for the 1998 report (above). This assessment was based on results of the a stream survey conducted in September 1997 by the DNR Fisheries Bureau. Fish consumption uses remain "not assessed" due to lack of fish contaminant monitoring in this stream reach.

BROPHY CR

-- mouth to headwaters

Waterbody ID No.: IA 01-WPS-0050

Subsegment No.: 2

Subsegment Description: Cherry Cr->trib S33/34,T82N,R5E Clinton

Subsegment Length: 8.8 miles

ASSESSMENT COMMENTS: Assessment is based on results of an August 1997 fish survey by the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates rel. poor habitat quality. Little diversity of substr. and few pool/riffle sequences observed. Assess. form and maps suggest stream was staigtened extensively at one time. Frequent erosion of stream banks and mostly muddy substrate observed. Fair diversity of fish observed, all cyprinid species.

For 1996 report, use assessment of support of aquatic life use developed for the 1994 report (=PS).

For the 1998 report, used a review of results of the August 1997 fish survey by the DNR Fisheries Bureau to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to (1) presence of a diverse fish community (13 species from 6 families) for streams in the Southern Iowa Rolling Loess Prairies subcoregion (47f) and (2) presence of nearly all the expected fish taxa (8 of 9) for streams in this subregion. Increase in number of taxa between the 1991 and 1997 surveys due to either better quality habitat sampled or due to more thorough sampling in the 1997 survey, but not due to change in stream quality. As noted on the field sheet from the 1991 stream use assessment, consider support of the Class B(LR) uses threatened by frequent stream bank erosion.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened" (minor impacts). EXPLANATION: Continue to use the assessment of the Class B(WW) uses developed for the 1998 report (above). This assessment was based on results of the a stream survey conducted in August 1997 by the DNR Fisheries Bureau.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

SILVER CR -- mouth to headwaters
Subsegment No.: 1 Subsegment Description: mouth to Clear Cr., Clinton Co.

Waterbody ID No.: IA 01-WPS-0070

Subsegment Length: 10 miles

ASSESSMENT COMMENTS: Assessment is based on results of a 1997 DNR fish survey. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 report.

For the 1998 report, used a review of results from the August 1997 fish survey (N/12, S28, T81N, R3E) by the DNR Fisheries Bureau to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (13 species from 5 families) for streams in the Southern Iowa Rolling Loess Prairies subcoregion (47f), (2) presence of a majority of the expected fish taxa (5 of 9) for streams in this subregion, and (3) presence of two of expected game fish species (smallmouth bass and channel catfish). Field notes indicate good habitat quality with lots of woody structure in stream and some pools too deep to sample by wading.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Continue to use the assessment of the Class B(WW) uses developed for the 1998 report (above). This assessment was based on results of the a stream survey conducted in August 1997 by the DNR Fisheries Bureau. Fish consumption uses remain "not assessed" due to lack of fish contaminant monitoring in this stream reach.

SILVER CR -- mouth to headwaters
Subsegment No.: 2 Subsegment Description: Clear Cr. to Negro Cr.

Waterbody ID No.: IA 01-WPS-0070

Subsegment Length: 10 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) 1997 DNR Fisheries Bureau survey in DeWitt city park (T-81N, R-3E, Sec. 13) and (2) DNR 1998 Biocriteria sampling: Fish IBI= 40(fair), BM-IBI= 55(fairly good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 report.

For the 1998 report, used a review of results from the August 1997 fish survey by the DNR Fisheries Bureau in Clinton County (S13, T81N, R13W) to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (11 species from 4 families) for the Southern Iowa Rolling Loess Prairies subcoregion (47f), (2) presence of a majority of the expected fish taxa (6 of 9) for streams in this subregion, and (3) indications of good quality aquatic habitats.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened" (minor impacts). EXPLANATION: Continue to use the assessment of the Class B(WW) uses developed for the 1998 report (above). This assessment was based on results of the a stream survey conducted in August 1997 by the DNR Fisheries Bureau.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

WALNUT CR

-- mouth to headwaters

Waterbody ID No.: IA 01-WPS-0109

Subsegment No.: 0

Subsegment Description: mouth to White Oak Cr., Jones Co.

Subsegment Length: 9.6 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of a fish kill in July 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates below average habitat quality. Little substr. and habitat diversity observed. Frequent channeliz. and pasture use impacts including frequent stream bank erosion noted. Fair number of fish species observed, but low numbers per species.

For 1996 report, used assessment of aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, used a review of the September 1991 DNR stream use assessment in Jones County to continue to assess support of the Class B(LR) aquatic life uses as PS due to (1) presence of less than a majority of the expected fish taxa (4 of 9) for streams in the Southern Iowa Rolling Loess Prairies subcoregion (47f) and (2) due to indications of below average habitat quality due to general lack of substrate diversity, frequent channel alterations due to channel straightening and pasturing of the riparian zone, and frequent streambank erosion. Notes on field sheet suggest severe pasturing impacts: "pastured area very trampled." The data upon which this assessment is based are more than 5 years old. Follow-up monitoring is needed to determine the status of the aquatic communities and habitats and to determine the degree to which the Class B(LR) aquatic life uses may be impaired.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "partially supported." EXPLANATION: The assessment of support of the Class B(LR) uses developed for the previous (1998) report ("partially supported"; see above) was based primarily on results from a DNR stream use assessment conducted in 1991. The results from this assessment are now considered too old (greater than five years) to be useful for developing water quality assessments of current conditions. A fish kill occurred on Walnut Creek near Olin in Jones County on July 26, 1999. This kill was attributed to agricultural runoff of animal waste (manure was noticed in South Fork Walnut Creek a week prior to the kill). Approximately three miles of stream were affected; an estimated 120 fish were killed. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the support of the Class B(LR) aquatic life uses was assessed as "partially supported." The assessment of the Class B(LR) uses of this stream reach as "partially supported" for the 1994, 1996, 1998, and 2000 Section 305(b) reports-with two different sources of water quality information (1991 stream assessment and 1998 fish kill)-suggests an ongoing impairment to the aquatic life uses of this stream.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

BUFFALO CR

-- mouth to dam of Coggon Impound

Waterbody ID No.: IA 01-WPS-0110

Subsegment No.: 0

Subsegment Description: mouth to dam of Coggon Impound., Linn Co

Subsegment Length: 25 miles

ASSESSMENT COMMENTS:

Assessment is based on the following: (1) DNR fish kill database, three kills in Jones Co. and (2) DNR Biocriteria sampling: fish 31 spp., 6 fams., Fish IBI= 80(excellent), BM-IBI= 72(good). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information on three pollution-caused fish kills in Jones County in the years 1985, 1989, and 1996. Occurrence of three pollution-caused kills in a 15-year period suggests an ongoing impairment to the aquatic community of the stream; thus, assess support of aquatic life uses as PS due to repeated fish kills.

For 1998 report, added biocriteria sampling results from one location in Linn Co. sampled in Aug. 1996. The site is upstream several miles from area of repeated fish kills. Fish sampling results indicate good fish community health (IBI=54, max. poss. score=60). Game fish and several intolerant fish species were present. Habitat quality was evaluated as fairly good. Stream is relatively wide and shallow, with occasional riffles. Pasture impacts are evident in some reaches. The relatively high quality fish community suggests good water quality. Livestock feedlots and streamside pasture use are threats to continued attainment of B(WW) aquatic life use. A review of the results of the August 1996 DNR biocriteria sampling in Linn County, upon which this assessment is based, shows that, in the absence of impacts to the physical characteristics of this stream, full support of the Class B(WW) aquatic life uses would be indicated due to (1) presence of an exceptionally diverse fish community (31 species from 6 families) for streams in the Iowan Surface subcoregion (47c), (2) presence of all the expected fish taxa (11 of 11) for streams in this subregion, (3) presence of game fish species, including channel catfish (1) and smallmouth bass (49), and (4) presence of several environmentally sensitive species, including American brook lamprey, rosyface shiner, northern hogsucker, rock bass, smallmouth bass, and four darter species including banded darter (25).

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Continue to use the assessment of the Class B(WW) uses developed for the 1998 report (see above). This assessment was based on results of the DNR biocriteria survey conducted in August 1996. No fish kills have been reported for this reach since August 1996. Fish consumption uses remain "not assessed" due to lack of fish contaminant monitoring in this stream reach.

Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

BUFFALO CR

-- up end of Coggon Impoundment to headwaters

Waterbody ID No.: IA 01-WPS-0130

Subsegment No.: 0

Subsegment Description: Coggon Impoundment to trib in S27,T88N,R7W Buchanan Co.

Subsegment Length: 31 miles

ASSESSMENT COMMENTS: Assessment is based on results of two DNR stream use assessments in October 1995. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report: no information.

For the 1996 report, used results of two stream use assessments to assess support of aquatic life uses as FST due to (1) habitat scores for both assessments better than the overall median score (22) for DNR stream use assessments, (2) fish scores for both assessments (13) greater than the 75th percentile for stream use assessments made with electrofishers, (3) presence of very diverse fish communities at both sites sampled (27 and 28 species), (3) presence of smallmouth bass at both locations, (4) presence of rare species (e.g., American brook lamprey). This stream, however, is not without serious threats to support of aquatic life uses. The assessment site SE of Winthrop in Buchanan Co. was heavily pastured with the resulting sloughing of stream banks and widening/shallowing of the stream. The field sheet indicates both frequent channel alterations (due to pasturing) and frequent bank erosion. This reach of Buffalo Creek could benefit immensely from fencing of the stream corridor and establishment of a riparian buffer strip. The extremely high number of fish species in this reach, in the presence of often severe habitat degradation, suggests that Buffalo Creek is capable of supporting a truly exceptional aquatic community.

For the 1998 report, used a review of the field sheets from the two October 1995 DNR stream use assessments in Delaware and Buchanan counties to continue to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of very diverse fish communities at both locations (28 species from 6 families & 27 species from 5 families) for streams in the Iowan Surface subcoregion (47c), (2) presence of all the expected fish taxa (11 of 11) at both locations, (3) presence of the expected game fish species (smallmouth bass) at both locations, and (4) presence of several environmentally sensitive species, including American brook lamprey, largescale stoneroller, northern hogsucker, rock bass, and smallmouth bass. As stated in the assessment developed for the 1996 report, the environmental resiliency of this stream is considerable, given the impacts to the physical characteristics due to overpasturing of the riparian zone. Better protection of the stream corridor is needed.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Continue to use the assessment of the Class B(WW) uses developed for the 1998 report (see assessment for the 1998 report above). This assessment was based on results of two DNR stream use assessments in October 1995. Fish consumption uses remain "not assessed" due to lack of fish contaminant monitoring in this stream reach.

Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

PINE CR

-- mouth to headwaters

Waterbody ID No.: IA 01-WPS-0140

Subsegment No.: 0

Subsegment Description: mouth to trib S20,T89N,R8W Buchanan Co.

Subsegment Length: 11 miles

ASSESSMENT COMMENTS: 1997 biocriteria sampling: Fish 23 spp., 5 fams. Fish IBI= 79(good), BM-IBI= 60(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1994 or 1996 reports.

For the 1998 report, used results of the August 1997 DNR biocriteria sampling 5.5 miles NW of Quasqueton to assess support of the Class B(LR) aquatic life uses as FS due to (1) presence of a very diverse fish community (23 species from 5 families) for the Iowa Surface subecoregion with relatively large numbers of individuals per species (over 1,400 fish captured during sampling, thus indicating a very productive stream), (2) presence of all expected fish taxa (11 of 11) for streams in this subecoregion, and (3) lack of violations of Class B(LR) WQ criteria in the sample collected during biocriteria sampling.

For the 2000 report, the assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 79 (good) and the BM-IBI score was 60 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

LITTLE WAPSIPINICON R

-- mouth to headwaters

Waterbody ID No.: IA 01-WPS-0160

Subsegment No.: 2

Subsegment Description: Buck Cr to trib S13,T93N,R11W Bremer Co.

Subsegment Length: 37 miles

ASSESSMENT COMMENTS: Assessment is based on results of two DNR stream use assessments in November 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used stream assessments from November 1994 to assess aquatic life uses as FST due to (1) habitat scores from both assessments better than the overall median habitat score from DNR stream use assessments (22), (2) fish scores from both assessments better than the 75th percentile from DNR stream use assessments made with seines, (3) reach in Bremer Co. with very stable banks and only isolated areas with old pasture impacts, (4) relatively diverse fish communities at both locations assessed (> 10 species). Stream appears threatened by pasture impacts and stream bank erosion in lower portions of the B(LR) segment.

For the 1998 report, used a review of the field sheets from the two November 1994 DNR stream use assessments in Buchanan and Bremer counties to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of relatively diverse fish communities at both locations with 13 species from 3 families collected at both locations, (2) presence of a majority of the expected fish taxa (8 of 11 at both locations) for streams in the Iowan Surface subcoregion, and (3) indications of above average habitat quality due to diverse substrates, presence of pool/riffle sequences, and above average low flow characteristics (at downstream site). Although field notes indicate no significant impacts to the physical characteristics of the upstream site, the downstreams site had frequent channel alterations due to pasturing of the riparian corridor and frequent streambank erosion.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened" (minor impacts). EXPLANATION: Continue to use the assessment of the Class B(LR) uses developed for the 1998 report (see assessment for the 1998 report above). This assessment was based on results of two DNR stream use assessments in November 1994.

BUCK CR

-- mouth to headwaters

Waterbody ID No.: IA 01-WPS-0170

Subsegment No.: 0

Subsegment Description: mouth to trib S9,T92N,R11W Bremer Co.

Subsegment Length: 25 miles

ASSESSMENT COMMENTS: Assessment is based on results of a November 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of stream use assessment to assess aquatic life uses as FST due to (1) habitat score (25) better than overall median score (22) for DNR stream use assessments, (2) fish score (12) better than 75th percentile score (10) for stream assessments made with seines, (3) comments on field sheet that indicate isolated channel alterations and only "some" stream bank erosion, and (4) fairly diverse fish community (9 species).

For the 1998 report, used a review of the field sheet from the November 1994 DNR stream use assessment in Buchanan County to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (9 species from 3 families) for streams in the Iowan Surface subcoregion (47c) and (2) indications of above average habitat quality due to diverse substrates, presence of several pool/riffle sequences, and lack of significant impacts to the physical characteristics of this stream. Less than a majority of the expected fish taxa were collected (5 of 11); field notes, however, indicate that woody debris in the stream hindered effective seining. Additional monitoring is needed to better define the status of the aquatic communities of this stream.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened" (minor impacts). EXPLANATION: Continue to use the assessment of the Class B(LR) uses developed for the 1998 report (see assessment for the 1998 report above). This assessment was based on results of a DNR stream use assessment in November 1994.

Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

UNNAMED CR

-- New segment for 2000 305(b) cycle.

Waterbody ID No.: IA 01-WPS-0175

Subsegment No.: 0

Subsegment Description: mouth (S26, T93N, R11W, Bremer Co.) to headwaters

Subsegment Length: 3 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of fish kill in August 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

"General Use" waterbody. No information available; not assessed for the 1994, 1996 or 1998 reports.

For the 2000 report: SUMMARY: The general aquatic life uses of this stream were assessed as "partially supported." EXPLANATION: A fish kill occurred in this unnamed tributary of the Little Wapsipinicon River on August 19, 1998, approximately 1 mile northwest of Sumner in Bremer County. The kill was attributed to runoff of animal waste. Approximately 1 mile of stream was affected; an estimated 1,481 fish were killed (a fish kill also occurred on an "unnamed tributary of the Little Wapsipinicon River near Sumner" on August 1, 1995, with 300 fish killed due to runoff of animal waste; precise location for this kill is not available). According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, due to the August 1998 fish kill, the general aquatic life uses of this stream were assessed as "partially supported."

CRANE CR

-- mouth to headwaters

Waterbody ID No.: IA 01-WPS-0180

Subsegment No.: 0

Subsegment Description: mouth to trib S17,T92N,R12W Bremer Co.

Subsegment Length: 8.5 miles

ASSESSMENT COMMENTS: Assessment is based on results of a November 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information from two stream assessments to assess aquatic life uses as PS due to (1) habitat scores worse than the overall median habitat score for DNR stream use assessments (22) & (2) field sheets indicate "frequent" channel alterations and stream bank erosion at both assessment locations. Both sites had relatively diverse fish communities and fish scores equal to or better than the 75th percentile for DNR stream use assessments made with seines (10). Based on stream assessments, the major threat to support of aquatic life uses is over pasturing of the stream corridor and the resultant negative impacts on aquatic habitat (e.g., siltation, stream widening and shallowing).

For the 1998 report, used a review of the field sheet from the November 1994 DNR stream use assessment in Bremer County (data from 1992 assessment were not used due to high flow conditions during sampling) to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to (1) presence of a moderately diverse fish community (10 species from 3 families) for streams in the Iowan Surface subcoregion (47c), (2) presence of a majority of the expected fish taxa (7 of 11) for streams in this subregion, and (3) indications of some good habitat features (i.e., diverse substrates and several pool/riffle sequences). Field sheet suggests that frequent pasturing of the riparian corridor and frequent streambank erosion are the primary impacts to the physical characteristics of this stream.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened" (minor impacts). EXPLANATION: Continue to use the assessment of the Class B(LR) uses developed for the 1998 report (see assessment for the 1998 report above). This assessment was based on results of a DNR stream use assessment in November 1994.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

WAPSIPINICON R, E BR

-- mouth to headwaters

Waterbody ID No.: IA 01-WPS-0190

Subsegment No.: 2

Subsegment Description: upend Sweet Marsh to trib S36,T96N,R13W

Subsegment Length: 30 miles

ASSESSMENT COMMENTS: 1992 SUA: habscr/fshscr=24/10 (seine). 1997 Biocriteria: Fish IBI= 43(fair), BM-IBI= 73(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates about avg. habitat quality for B(LR) stream. Little diversity of substr. (rock, mud, sand noted) and few pool/riffle sequences observed. Isolated cases of stream channeliz. noted. Fairly diverse fish community of predominantly cyprinid species observed.

For 1996 report, used assessment of aquatic life uses developed for the 1994 report (=FST) (although fields for "support of designated uses" were blank).

For the 1998 report, used results of the August 1997 DNR biocriteria sampling approximately 2 mi NE of Tripoli to update the assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST). Results of the biocriteria sampling were used to assess the support of the Class B(LR) uses as FST due to (1) presence of a moderately diverse fish community (14 species from 5 families) for streams in the Iowan Surface subecoregion, (2) presence of a majority (8 of 11) of the expected fish taxa for streams in this subecoregion, and (3) lack of violations of Class B(LR) WQ criteria in the sampled collected during biocriteria sampling.

For the 2000 report, the assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 43 (fair) and the BM-IBI score was 73 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Wapsipinicon River Subbasin

E FK WAPSIPINICON R

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 01-WPS-0192

Subsegment No.: 0

Subsegment Description: unnamed trib (NE 1/4, S36, T96N, R13W, Chickasaw Co.) to headwat

Subsegment Length: 12 miles

ASSESSMENT COMMENTS: 1995 Biocriteria: Fish IBI= 41 (fair), BM-IBI= 48 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

2000 report: The assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 41 (fair), and the BM-IBI score was 48 (fair). The aquatic life use support status was assessed as partially supporting (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Northeast Iowa River Basins

Yellow River Subbasin

MINERS CR

-- mouth to headwaters

Waterbody ID No.: IA 01-YEL-0010

Subsegment No.: 1

Subsegment Description: mouth to Hwy 52, Clayton Co.

Subsegment Length: 5.8 miles

ASSESSMENT COMMENTS: Assessment is based on results of an October 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information from the October 1994 stream use assessment to assess support of B(LR) aquatic life uses as PS due to (1) notes regarding extensive channelization, & (2) notes regarding noticeable impact of WWTP ("mild grey-green color below outfall"). Fish community not sampled due to large amount of debris and extensive accumulation of mud.

For the 1998 report, continue to assess support of the Class B(LR) aquatic life uses as PS. Follow-up monitoring is needed to determine the status of the aquatic communities and habitats and to determine the degree to which the Class B(LR) aquatic life uses may be impaired.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of the Class B(LR) uses developed for the 1998 report (see assessment for the 1998 report above). This assessment was based on results of a DNR stream use assessment in October 1994. Although the results of the October 1994 stream assessment are less than five years old, additional (follow-up) monitoring is needed on this stream reach to better define the status of water quality and aquatic communities.

Rivers and Streams: Northeast Iowa River Basins

Yellow River Subbasin**SNY MAGILL CR**

-- mouth to headwaters

Waterbody ID No.: IA 01-YEL-0030

Subsegment No.: 0

Subsegment Description: mouth to W line, S6,T94N,R3W Clayton Co.

Subsegment Length: 7.6 miles

ASSESSMENT COMMENTS: Assessment is based on (1) results of at Sny Magill project sites monitored for water quality, fish, macroinverts, and habitat at varying frequencies and (2) DNR summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information in Seigley, et al. (1996), "Sny Magill nonpoint source pollution monitoring project, Clayton County, Iowa: Water Year 1994," DNR/GSB Technical Information Series 36 to assess support of aquatic life uses as FST. Results of monitoring show that stream supports healthy communities of fish and aquatic macroinvertebrates. Results of water quality monitoring suggest that episodes of low DO occur in stream of both the Sny Magill and Bloody Run watersheds. The aquatic communities of these watersheds, however, appear healthy and do not indicate a WQ impact due to low DO/organic enrichment. Causes of low DO may be related to runoff events, but issue needs further study.

For 1998 report: Results of water chemistry and biological monitoring from 1996 and 1997 were reviewed. During this period there were no violations of the d.o. standard. Earlier reports of low d.o. have not been explained. Biological monitoring continues to indicate support of a good quality aquatic community of benthic macroinvertebrates and fish. B(CW) aquatic life use assessment level was upgraded to FS from FS/T due to extensive implementation of agric. BMPs in the watershed and monitoring evidence. Relatively low total numbers of forage fish at monitoring sites in Sny Magill Creek and North Cedar Creek in 1995-1997 surveys have not been explained. A herbicide spill which occurred May 19, 1995 was suggested as a possible cause. However, some of the sites having low numbers of fish are located upstream from the spill area, and the benthic macro- invertebrate community was apparently not affected by the spill.

For the 2000 report: **SUMMARY:** The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." **EXPLANATION:** Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), Sny Magill Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Monitoring of chemical water quality, habitat quality, fish populations, and aquatic macroinvertebrate populations has been conducted at Sny Magill Creek since 1992 as part of the Sny Magill Creek Nonpoint Source Pollution Monitoring Project. Results of this monitoring show good chemical water quality and aquatic life. Results of weekly chemical water quality monitoring from October 1996 through September 1999 at stations on the lower and upper reaches of this stream show (1) no violations of the Class B(CW) water quality criterion for dissolved oxygen (7.0 mg/l) in the 312 samples collected and (2) two estimated violations of the Class B(CW) chronic criterion for ammonia-nitrogen in 311 samples collected (these violations occurred at the upper reach station on February 18, 1997 and November 11, 1997). According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), these two violations suggest an impairment of the aquatic life uses. For the following reasons, however, these violations were not used in the assessment of the aquatic life uses: (1) violations of the temperature/pH-dependent water quality criteria for ammonia-nitrogen were based on "worst case" estimated values of pH (pH was not measured during sample collection at the Sny Magill project sites); (2) the estimated violations were relatively close to the corresponding water quality criteria (February 18, 1997: NH₃-N = 0.5 mg/l; WQ criterion = 0.39 mg/l; November 11, 1997: NH₃-N = 2.1 mg/l; WQ criterion = 2.03 mg/l). Results of monthly monitoring at the mid-reach station show no violations of these criteria for either dissolved oxygen or ammonia-nitrogen in the 36 samples collected. The episodes of low dissolved oxygen that occurred in the Sny Magill and Bloody Run watersheds from 1992-1994 (see assessments for the 1996 and 1998 reports above) were due, at least in part, to problems with field equipment and certain reagents used to measure dissolved oxygen. Since July 1995, measurements have been made with a YSI portable dissolved oxygen meter. During the period October 1996 through September 1999, none of the samples collected at monitoring sites in the Sny Magill Nonpoint Source project have violated the Class B(CW) water quality criterion for dissolved oxygen of 7.0 mg/l. Based on the Hilsenhoff Biotic Index, results of biological monitoring for benthic macroinvertebrates suggest "very good" water quality. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach. For more information on the Sny Magill Creek Nonpoint Source Pollution Monitoring Project visit the DNR-Geological Survey Bureau web site at <http://www.igsb.uiowa.edu/inforsch/waterag.htm>.

Rivers and Streams: Northeast Iowa River Basins

Yellow River Subbasin

N CEDAR CR

-- mouth to headwaters

Waterbody ID No.: IA 01-YEL-0040

Subsegment No.: 0

Subsegment Description: mouth to W line S24,T94N,R4W Clayton Co.

Subsegment Length: 4.7 miles

ASSESSMENT COMMENTS: Assessment is based on results of water quality and biological monitoring conducted as part of the Sny Magill / Blood Run project. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Used data from one biocriteria site in Clayton County to make use support determination. Fish and habitat metrics from stream use assessment protocol were applied to the data. Data indicate very good physical habitat quality and fish collection included juv. and adult brown trout and juvenile brook trout. Water quality data suggest that episodes of low DO occur in this stream and other streams in the Sny Magill and Bloody Run watersheds. The aquatic communities of these watersheds, however, appear healthy and do not suggest a WQ impact due to low DO/organic enrichment. Cause of low DO may be related to runoff events, but issue needs further study.

For 1998 report: Water chemistry and biological monitoring data from the NPS monitoring project for 1996 and 1997 were reviewed. During this period, no violations of wq standards were detected. Monitoring of benthic macroinvertebrates and fish continue to indicate a healthy aquatic community. Relatively low numbers of fish were found during 1995-1997 at North Cedar Creek and Sny Magill Creek monitoring sites. No cause has been identified. The types of benthic macroinvertebrates and fish found are indicative of relatively good water quality. Annual habitat evaluations conducted since 1991 have documented good physical habitat conditions. The B(CW) aquatic life use assessment was upgraded from FS/T to FS due to implementation of BMPs to reduce sediment and nutrient delivery from the watershed.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life remained assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: The assessment of the Class B(CW) aquatic life uses is based on results of monitoring of chemical water quality, habitat quality, fish populations, and aquatic macroinvertebrate populations at North Cedar Creek; this monitoring has been conducted since 1992 as part of the Sny Magill Creek Nonpoint Source Pollution Monitoring Project. This monitoring shows good chemical water quality and aquatic life. Results of weekly chemical water quality monitoring from October 1996 through September 1999 at the stations on the lower reach of this stream show (1) no violations of the Class B(CW) water quality criterion for dissolved oxygen (7.0 mg/l) in the 155 samples collected (minimum level = 8.0 mg/l) and (2) no (estimated) violations of the Class B(CW) chronic criterion for ammonia-nitrogen in 156 samples collected (violations of the temperature/pH-dependent water quality criteria for ammonia-nitrogen were based on "worst case" estimated values of pH; pH was not measured during sample collection at the Sny Magill project sites). The episodes of low dissolved oxygen that occurred in the Sny Magill and Bloody Run watersheds from 1992-1994 (see assessments for the 1996 and 1998 reports above) were due, at least in part, to problems with field equipment and certain reagents used to measure dissolved oxygen. Since July 1995, measurements have been made with a YSI portable dissolved oxygen meter. During the period October 1996 through September 1999, none of the samples collected at monitoring sites in the Sny Magill Nonpoint Source project have violated the Class B(CW) water quality criterion for dissolved oxygen of 7.0 mg/l. Based on the Hilsenhoff Biotic Index, results of biological monitoring for benthic macroinvertebrates suggest good to very good water quality. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach. For more information on the Sny Magill Creek Nonpoint Source Pollution Monitoring Project visit the DNR-Geological Survey Bureau web site at <http://www.igsb.uiowa.edu/inforsch/waterag.htm>.

Rivers and Streams: Northeast Iowa River Basins

Yellow River Subbasin

SNY MAGILL CR, W FK

-- mouth to headwaters

Waterbody ID No.: IA 01-YEL-0050

Subsegment No.: 0

Subsegment Description: mouth to W line S7,T94N,R3W Clayton Co.

Subsegment Length: 1 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring of fish, macroinvertebrates, habitat and water quality as part of the Sny Magill / Bloody Run project. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of monitoring described in Seigley et al (1996) (Sny Magill nonpoint source pollution monitoring project, Clayton County, Iowa, Water Year 1994, DNR/ GSB Technical Information Series 36) to assess support of aquatic life uses as FST. Water quality data suggest that episodes of low DO occur in both the Bloody Run and Sny Magill watersheds. The aquatic communities of these drainages, however, appear healthy and do not suggest impact from low DO/organic enrichment. Causes of low DO may be related to runoff events, but this issue needs further study.

For 1998 report: Biological and water chemistry data for 1996 and 1997 from the NPS monitoring project were reviewed. There were no violations of the d.o. standard during this period. The cause of low d.o. levels in earlier monitoring has not been explained. The results of benthic macroinvertebrate monitoring indicate a healthy biological community and good water quality. Annual habitat evaluations have documented generally good physical habitat quality. The B(CW) aquatic life assessment was upgraded from FS/T to FS due to extensive implementation of BMPs to reduce sediment and nutrient delivery from the watershed.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life remained assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: The assessment of the Class B(CW) aquatic life uses is based on results of monitoring of chemical water quality, habitat quality, fish populations, and aquatic macroinvertebrate populations at West Fork Sny Magill Creek; this monitoring has been conducted since 1992 as part of the Sny Magill Creek Nonpoint Source Pollution Monitoring Project. This monitoring shows good chemical water quality and aquatic life. Results of weekly chemical water quality monitoring from October 1996 through September 1999 at the stations on the lower reach of this stream show (1) no violations of the Class B(CW) water quality criterion for dissolved oxygen (7.0 mg/l) in the 156 samples collected (minimum level = 9.0 mg/l) and (2) no (estimated) violations of the Class B(CW) chronic criterion for ammonia-nitrogen in 155 samples collected (violations of the temperature/pH-dependent water quality criteria for ammonia-nitrogen were based on "worst case" estimated values of pH; pH was not measured during sample collection at the Sny Magill project sites). The episodes of low dissolved oxygen that occurred in the Sny Magill and Bloody Run watersheds from 1992-1994 (see assessments for the 1996 and 1998 reports above) were due, at least in part, to problems with field equipment and certain reagents used to measure dissolved oxygen. Since July 1995, measurements have been made with a YSI portable dissolved oxygen meter. During the period October 1996 through September 1999, none of the samples collected at monitoring sites in the Sny Magill Nonpoint Source project have violated the Class B(CW) water quality criterion for dissolved oxygen of 7.0 mg/l. Based on the Hilsenhoff Biotic Index, results of biological monitoring for benthic macroinvertebrates suggest good to very good water quality. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach. For more information on the Sny Magill Creek Nonpoint Source Pollution Monitoring Project visit the DNR-Geological Survey Bureau web site at <http://www.igsb.uiowa.edu/inforsch/waterag.htm>.

Rivers and Streams: Northeast Iowa River Basins

Yellow River Subbasin**BLOODY RUN**

-- mouth to headwaters

Waterbody ID No.: IA 01-YEL-0060

Subsegment No.: 0

Subsegment Description: mouth to W line S22,T95N,R4W, Clayton Co

Subsegment Length: 12 miles

ASSESSMENT COMMENTS: Assessment is based on (1) results of monitoring of fish, macroinvertebrates, habitat & water quality as part of the Sny Magill / Bloody Run project and (2) DNR summary of trout reproduction. Highlighted in Iowa Conservationist. See attached document.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of monitoring for fish, water quality, habitat, and aquatic macroinvertebrates presented in Seigley et al. (1996) (Sny Magill nonpoint source pollution monitoring project, Clayton County, Iowa: water year 1994, DNR/ GSB Technical Information Series 36) to assess the B(CW) aquatic life uses as FST. Water quality data, however, suggest that episodes of low DO occur on both this stream and Sny Magill. Aquatic community does not reflect any low DO/organic enrichment impact. Causes of low DO may be related to runoff events, but issue needs further study. Stream highlighted as a trout stream in the March/April 1996 issue of the Iowa Conservationist.

For the 1998 report, chemical and biological monitoring data for 1996-1997 from the NPS monitoring project were reviewed. No violations of the d.o. standard were detected. Low levels of d.o. observed in earlier monitoring have not been explained. Benthic macroinvertebrate and fish monitoring results indicate a healthy biological community and good water quality. B(CW) aquatic life use assessment was upgraded from FS/T to FS based on continued monitoring evidence of good water quality and physical habitat.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), Bloody Run Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Monitoring of chemical water quality, habitat quality, fish populations, and aquatic macroinvertebrate populations has been conducted at Bloody Run Creek since 1992 as part of the Sny Magill Creek Nonpoint Source Pollution Monitoring Project. Results of this monitoring show good chemical water quality and aquatic life. Results of weekly chemical water quality monitoring from October 1996 through September 1999 at stations on the lower and middle reaches of this stream show (1) no violations of the Class B(CW) water quality criterion for dissolved oxygen (7.0 mg/l) in the 312 samples collected and (2) three estimated violations of the Class B(CW) chronic criterion for ammonia-nitrogen in 311 samples collected (estimated violations occurred at the middle reach station on March 11, 1997 and at both the lower and middle reach stations on March 18, 1997). Results of monthly monitoring at the upper reach station show no violations of criteria for dissolved oxygen and one estimated violation of ammonia-nitrogen in the 36 samples collected. The estimated violation of ammonia nitrogen occurred on March 31, 1998. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), these violations suggest an impairment of the aquatic life uses. For the following reasons, however, these violations were not used in the assessment of the aquatic life uses: (1) violations of the temperature/pH-dependent water quality criteria for ammonia-nitrogen were based on "worst case" estimated values of pH (pH was not measured during sample collection at the Sny Magill / Bloody Run project sites); (2) three of the four estimated violations were relatively close to the corresponding water quality criteria (March 11, 1997: NH₃-N = 0.6 mg/l; WQ criterion = 0.4 mg/l; March 18, 1997: NH₃-N = 0.7 mg/l; WQ criterion = 0.55 mg/l; March 31, 1998: 0.40 mg/l; WQ criterion = 0.39 mg/l). The episodes of low dissolved oxygen that occurred in the Sny Magill and Bloody Run watersheds from 1992-1994 (see assessments for the 1996 and 1998 reports above) were due, at least in part, to problems with field equipment and certain reagents used to measure dissolved oxygen. Since July 1995, measurements have been made with a YSI portable dissolved oxygen meter. During the period October 1996 through September 1999, none of the samples collected at monitoring sites in the Sny Magill Nonpoint Source project have violated the Class B(CW) water quality criterion for dissolved oxygen of 7.0 mg/l. Based on the Hilsenhoff Biotic Index, results of biological monitoring for benthic macroinvertebrates suggest "very good" water quality. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach. For more information on the Sny Magill Creek Nonpoint Source Pollution Monitoring Project visit the DNR-Geological Survey Bureau web site at <http://www.igsb.uiowa.edu/inforsch/waterag.htm>.

Rivers and Streams: Northeast Iowa River Basins

*Yellow River Subbasin***YELLOW R**

-- mo. to confl w/ Hickory Cr

Waterbody ID No.: IA 01-YEL-0070

Subsegment No.: 0

Subsegment Description: mo. to Co. rd. X26. Allamakee Co.

Subsegment Length: 22 miles

ASSESSMENT COMMENTS: Assessment based on results of (1) 1998 DNR Biocriteria sampling: Fish IBI= 63(good), BM-IBI= 67(good), (2) DNR quarterly WQ monitoring, and (3) WQ monitoring at Sny Magill / Bloody run project site near mouth. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: One of three samples exceeded WQ criterion for fecal coliform bacteria; assessed as PS based on BPJ.

For 1996 report, changed assessment of primary contact recreat. uses from PS to NAS due to lack of sufficient data. Thus, the 1994 assessment of aquatic life uses (FST) remains. This assessment is supported by fish surveys at 3 locations in this reach of the Yellow River in May 1989 by Daryl Howell and John Olson of DNR: Volney (19 species); Sixteen (11 species); Ion (14 species). This reach not sampled during DNR stream use assessments conducted from 1990-1995. [DNR fish surveys: JRO- 20, 21, and 22, 1989.]

For the 1998 report, used a review of field notes from the three May 1989 DNR fish surveys conducted in Allamakee County to continue to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of relatively diverse fish communities at all three locations (species/families, dstr-> upstr: 14/5; 11/3; 19/4) for streams in the Driftless Area ecoregion, (2) presence of a majority of the expected fish taxa at all locations (dstr->upstr: 5 of 9; 5 of 9; 9 of 9) for streams in this region, and (3) presence of above average habitat quality in this river reach. The expected game fish species--smallmouth bass--was encountered at only the most downstream site sampled (Ion). The data upon which this assessment is based are more than 5 years old. Additional monitoring is needed to update this assessment and to determine the status of the aquatic communities and habitats.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), Bloody Run Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Monitoring of chemical water quality, habitat quality, fish populations, and aquatic macroinvertebrate populations has been conducted at Bloody Run Creek since 1992 as part of the Sny Magill Creek Nonpoint Source Pollution Monitoring Project. Results of this monitoring show good chemical water quality and aquatic life. Results of weekly chemical water quality monitoring from October 1996 through September 1999 at stations on the lower and middle reaches of this stream show (1) no violations of the Class B(CW) water quality criterion for dissolved oxygen (7.0 mg/l) in the 312 samples collected and (2) three estimated violations of the Class B(CW) chronic criterion for ammonia-nitrogen in 311 samples collected (estimated violations occurred at the middle reach station on March 11, 1997 and at both the lower and middle reach stations on March 18, 1997). Results of monthly monitoring at the upper reach station show no violations of criteria for dissolved oxygen and one estimated violation of ammonia-nitrogen in the 36 samples collected. The estimated violation of ammonia nitrogen occurred on March 31, 1998. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), these violations suggest an impairment of the aquatic life uses. For the following reasons, however, these violations were not used in the assessment of the aquatic life uses: (1) violations of the temperature/pH-dependent water quality criteria for ammonia-nitrogen were based on "worst case" estimated values of pH (pH was not measured during sample collection at the Sny Magill / Bloody Run project sites); (2) three of the four estimated violations were relatively close to the corresponding water quality criteria (March 11, 1997: NH₃-N = 0.6 mg/l; WQ criterion = 0.4 mg/l; March 18, 1997: NH₃-N = 0.7 mg/l; WQ criterion = 0.55 mg/l; March 31, 1998: 0.40 mg/l; WQ criterion = 0.39 mg/l). The episodes of low dissolved oxygen that occurred in the Sny Magill and Bloody Run watersheds from 1992-1994 (see assessments for the 1996 and 1998 reports above) were due, at least in part, to problems with field equipment and certain reagents used to measure dissolved oxygen. Since July 1995, measurements have been made with a YSI portable dissolved oxygen meter. During the period October 1996 through September 1999, none of the samples collected at monitoring sites in the Sny Magill Nonpoint Source project have violated the Class B(CW) water quality criterion for dissolved oxygen of 7.0 mg/l. Based on the Hilsenhoff Biotic Index, results of biological monitoring for benthic macroinvertebrates suggest "very good" water quality. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach. For more information on the Sny Magill Creek Nonpoint Source Pollution Monitoring Project visit the DNR-Geological Survey Bureau web site at <http://www.igsb.uiowa.edu/inforsch/waterag.htm>.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Northeast Iowa River Basins

Yellow River Subbasin

DOUSMAN CR

-- mouth to headwaters

Waterbody ID No.: IA 01-YEL-0090

Subsegment No.: 0

Subsegment Description: mouth to Allamakee-Clayton county line

Subsegment Length: 3.4 miles

ASSESSMENT COMMENTS: Assessment is based on DNR summary of trout reproduction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1994, 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened" (minor impacts). Fish consumption uses remain "not assessed." EXPLANATION: Based on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, the Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), Dousman Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Rivers and Streams: Iowa-Cedar River Basin

*Cedar River Subbasin***CEDAR R**

-- mouth to Mud Cr., nr Wilton

Waterbody ID No.: IA 02-CED-0010

Subsegment No.: 0

Subsegment Description: mouth to Mud Cr., nr Wilton

Subsegment Length: 29 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) DNR quarterly WQ station NE of Conesville and (2) USGS NAWQA monitoring of water quality and fish tissue near Conesville. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Threatened	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 report.

For the 1998 report, used results from the DNR quarterly WQ monitoring station near Conesville to develop assessments of support of designated uses. The Class B(WW) aquatic life uses were assessed as FS due to lack of violations of Class B(WW) WQ criteria for either conventional or toxic contaminants in the 8 samples collected during the monitoring period. Class A primary contact uses were assessed as FS due to the relatively low levels of fecal coliform bacteria: in the three non-flow affected samples, the geometric mean was 78 orgs/100 ml and no samples (0%) exceeded 400 orgs/100 ml (see page 3-34 of the supplement to the EPA guidelines for preparation of the 1998 Section 305(b) reports). Overall support assessed as FST due to known threats from nonpoint source pollutants. Used results from fish tissue monitoring conducted for the USGS National Water Quality Assessment (NAWQA) program in the eastern Iowa river basins study area. The whole-fish composite sample of carp collected in September 1995 at Conesville contained some of the highest levels of the organochlorine compounds detected at the 16 sites in this study. Levels of all contaminants, however, were below respective FDA action levels, although the level of dieldrin (approximately 0.2 mg/kg) exceeded 1/2 its FDA action level of 0.3 mg/kg. Thus, assess support of fish consumption uses as fully supported/threatened (FST). For more information on the USGS study, see USGS Fact Sheet FS-027-97 (March 1997). Additional monitoring is needed to determine the status of the aquatic communities in this reach of the Cedar River.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain assessed as fully supported. The Class B(WW) aquatic life were assessed as "fully supported / threatened." Fish consumption uses remain assessed as fully supported / threatened. EXPLANATION: Results of DNR quarterly WQ monitoring in 1996 and 1997 from the DNR station located near Conesville (station 323015) showed relatively low levels of indicator bacteria (fecal coliforms) in samples collected during summers of 1996 and 1997. Based on this information, the Class A uses were assessed as fully supported (see assessment for the 1998 report above). Results of this monitoring also showed no violations of WQ criteria to protect the Class B(WW) aquatic life uses: no violations of state water quality criteria conventional or toxic parameters (dissolved oxygen, pH, and ammonia-nitrogen) occurred in the 8 samples collected during this monitoring period; neither of the two samples analyzed for toxic metals showed violations of these criteria. Results of monitoring by USGS at this station from March 1996 to October 1996 as part of the eastern Iowa basins NAWQA project (station 05465000) were consistent with results of DNR monitoring. This monitoring, however, showed that one of nine samples contained a level of dieldrin above the chronic water quality criterion to protect the Class B(WW) aquatic life uses. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), this one violation does not suggest an impairment of the aquatic life uses. Based on DNR's assessment methodology for Section 305(b) reporting, this violation suggests that the Class B(WW) aquatic life uses should be assessed as "fully supported/threatened." This assessment was based on results of quarterly monitoring. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Conesville station began in October 1999. Fish consumption uses remain assessed as "fully supported/threatened" based on results of USGS monitoring in September 1995 that showed levels of dieldrin in the sample of whole-fish carp were above 1/4 of the FDA action level (see assessment for the 1998 report above).

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Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

CEDAR R

-- Mud Cr. to Prairie Cr.

Waterbody ID No.: IA 02-CED-0020

Subsegment No.: 0

Subsegment Description: Mud Cr-Wilton to Prairie Cr-Cedar Rapids

Subsegment Length: 52 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring near Cedar Rapids in 1996. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, assessment based only on 1990 RAFT sample with all contams < 1/2 FDA action levels = FS.

For 1994 report, used 1990 RAFT sample and results from quarterly monitoring station at Cedar Bluff: no violations of Class B WQC = FS; overall assessment set at FST due to known threats from ag NPS. For 1996 report, used assessment of aquatic life uses (FST) developed for the 1994 report.

For 1998 report, used results of 1996 RAFT sampling to assess support of fish consumption uses as FS: all contaminants were less than 1/2 FDA action levels. Did not use results from the DNR quarterly WQ monitoring station at Cedar Bluff due to the age of the data (i.e., > five years). Thus, have no information on which to base an assessment of the Class B(WW) aquatic life or Class A primary contact uses. Although monitoring suggests that the fish consumption uses are fully supported, known threats from nonpoint source pollution suggests that the overall assessment should be FST. Additional monitoring is needed to determine the status of the aquatic communities of this reach of the Cedar River.

For the 2000 report: SUMMARY: Support of neither the Class A (primary contact recreation) uses nor the Class B(WW) aquatic life were assessed due to lack of data. Fish consumption uses remain assessed as "fully supporting." EXPLANATION: The DNR quarterly water quality monitoring station at Cedar Bluff (station 303057), upon which previous assessments of the Class A and Class B(WW) uses have been based, has not been monitored since the 1992-93 biennial period. These data are now considered too old (greater than five years) for developing a valid assessment of support of the Class A and Class B(WW) uses. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Cedar Bluff station began in October 1999. Results from this monitoring will allow development of an updated assessment for the 2002 report. Based on results of the EPA/DNR fish tissue (RAFT) monitoring near Cedar Rapids in 1996, the fish consumption uses remain assessed as "fully supporting" (see assessment for the 1998 report above).

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin**CEDAR R**

-- Prairie Cr. to Wolf Cr.

Waterbody ID No.: IA 02-CED-0030

Subsegment No.: 0

Subsegment Description: Prairie Cr-C. Rapids to Wolf Cr-LaPorte

Subsegment Length: 57 miles

ASSESSMENT COMMENTS: Assessment is based on results of WQ monitoring conducted through contract w/ Duane Arnold Energy Center at Palo; this monitoring network was discontinued in 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully
Drinking Water Supply	-- Threatened		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, 112 samples in this reach were analyzed for fecals; 60 were collected at approx average flows; 19 of these samples exceeded the Class A WQC (=32% =NS); 8 of 72 samples exceeded the Class C WQC for nitrate, with mean NO3= 5 mg/l and median NO3= 4.1 mg/l (mean < criterion = FS).

For 1994 report, no violations of Class B(WW) criteria for DO/pH, or ammonia in 186 samples, 2 violations for chronic criterion for copper in 12 samples, with both violations on same day (92/04/01) (due to incomplete data, use BPJ to assess Class B uses as FST. Of the 168 samples analyzed for fecal coliforms, 52 were collect. at approx average flows with 14 of these samples having fecals > Class A WQC (=27%, approx = PS). Although 6 of 137 samples analyzed for NO3 exceeded Class C WQC, average levels of NO3 at the 4 stations ranged from 6.5 to 6.8 (mean < WQC = FS).

For the 1996 report, at the four stations in this reach monitored through DAEC, no violations of DO/pH in 191 samples over the 2- year period, and 1 violation (60 ug/l) of the chronic WQC for copper in 16 samples. Of the 191 samples analyzed for fecals, 104 were collected during April-October; 72 were collected at approx average flows, and 28 samples contained > 200 orgs/100ml =39% of samples in violation of WQC. Based on lack of reports of waterborne diseases, and based on problems with use of fecal coliforms as indicators, use BPJ to assess primary contact uses as PS (same as in 1994). Of the 72 samples analyzed for NO3 at Station 324035 (John Comp farm) from October 1992 through Sept. 1995, none exceed the MCL of 10 mg/l. Based on likely natural sources of copper in Iowa rivers, and based on 305(b) methods, no impairment due to toxic metals.

For the 1998 report, had no violations of Class B(WW) WQ criteria for toxics in the approx 190 samples collected during the Oct 95 to Sep 97 period at the 4 monitoring stations in this reach; at the station downstream from DAEC, had 2 viols. of the Class B(WW) criterion for pH (both=9.1 units) in 48 samples (=4% viol., =FS). Thus, assess support of the Class B(WW) aquatic life uses as FST due to known threats from NPS pollutants. Assess support of Class C (drinking water uses as FS: had 2 viol. of the Class C WQ criterion for nitrate (both in June 96 & both=11 mg/l) in the 72 samples analyzed for NO3 at the station downstream from DAEC (=station 324035) (mean=5.22; median=5.3 mg/l as NO3-N. Also 2 viols. of the Class C WQ criterion for pH in 72 samples (= 3% violation=FS). Support of Class A (primary contact) use assessed as PS due to > 10% of samples (13 to 25%) that exceed 400 orgs/ 100 ml at all 4 stations. Geometric means all < 200 orgs/100ml. Additional study is needed to determine the sources of fecal coliform bacteria seen in the river.

For the 2000 report: SUMMARY: Class A (primary contact recreation) uses were assessed as "fully supporting," Class B(WW) aquatic life uses were assessed as "fully supporting," and Class C (drinking water) uses were assessed as "fully supporting / threatened." Fish consumption uses were assessed as "fully supporting." EXPLANATION: The assessments of support of the beneficial uses are based primarily on results of water quality monitoring conducted by the University of Iowa Hygienic Laboratory as part of the Cedar River Baseline Ecological Study sponsored by the Duane Arnold Energy Center at Palo, Iowa (see McDonald 1999, 2000). Of the 26 sampling events for indicator bacteria at the four DAEC monitoring stations in this reach of river during summer periods of 1998 and 1999, only 10 sampling events were conducted at river flows that were not materially affected by surface runoff. Higher than normal precipitation in Iowa, and especially in northeastern Iowa, during water year 1999 resulted in higher than normal river flows at many USGS gauging stations in Iowa, including the station on the Cedar River at Cedar Rapids (see pages 3 to 8 and 180 to 181 "Water Resources Data, Iowa, Water Year 1999" (Nalley et al. 2000)). These high flows resulted in monitoring at river discharges that exceeded the long-term monthly average flow plus one standard deviation of this average (flow statistics from Fischer et al. 1990). For purposes of Section 305(b) assessments, DNR uses the long-term average monthly flow plus one standard deviation of this average to identify river flows that are "materially affected by surface runoff." According to the Iowa Water Quality Standards (IAC 1990:8), the water quality criterion for fecal coliform bacteria (200 orgs/100 ml) does not apply during these conditions of high runoff and river flow. Geometric mean (GM) levels of fecal coliform bacteria for the 10 non-runoff-affected samples at each of the four monitoring stations were below the Iowa WQ standard of 200 orgs/100 ml (from upstream to downstream in Linn County): (1) Lewis Access: GM=88 orgs/100 ml with 1 sample (=10%) greater than the U.S. EPA's recommended single sample maximum level of 400 orgs/100 ml; (2) upstream from Duane Arnold EC: GM=69 orgs/100 ml, with no samples greater than the single sample maximum value; (3) downstream from Duane Arnold EC: GM=90 orgs/100 ml with no samples greater than the single sample maximum value; (4) 0.5 miles downstream from Duane Arnold EC: GM=63 orgs/100 ml with no samples greater than the single sample maximum value. Based on U.S. EPA methods for making use support decisions (EPA 1997b, pages 3-33 to 3-35), these results suggest full support of the primary contact recreation uses. Class B(WW) aquatic life uses were assessed as "fully supporting" due to the lack of violations of water quality criteria for conventional and toxic parameters (dissolved oxygen, pH, and ammonia-nitrogen) in the 46 samples collected at each of the four monitoring stations (total of 184 samples) during the 1998-1999 biennial period.

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Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

Class C (drinking water) uses were assessed as "fully supporting / threatened" due to the relatively few violations of the U.S. EPA MCL for nitrate. At each of the four monitoring stations in this river reach, 5 of the 46 samples collected during the 1998-1999 biennial period exceeded the 10 mg/l MCL. The maximum level of nitrate in the 184 samples was 13.0 mg/l. MCL violations tended to occur in only two months: April and June. Mean nitrate values at the four stations (N=46) ranged from 7.0 to 7.3 mg/l, with standard deviations ranging from 2.4 to 2.5 mg/l). Based on DNR's assessment methodology for Section 305(b) reporting, the frequency of violation at each of the four stations (= 11%) suggests that the drinking water uses should be assessed as "fully supported / threatened." Fish consumption uses were assessed as "fully supporting" based on results from EPA/DNR fish tissue (RAFT) monitoring in 1996 that showed levels of organochlorine contaminants and toxic metals in composite samples of fillets from channel catfish and freshwater drum were below 1/2 of the respective FDA action levels and DNR levels of concern.

CEDAR R

-- Wolf Cr to Cedar Falls Impound

Waterbody ID No.: IA 02-CED-0040

Subsegment No.: 0

Subsegment Description: Wolf Cr-LaPorte to Cedar Falls Impound.

Subsegment Length: 28 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) USGS NAWQA monitoring in 1996 & 97 and (2) fish tissue (RAFT) monitoring in 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Fully
Fish Consumption -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, based only on data from NASQAN site, had no violations of Class B WQC; thus, assessed as FS.

For 1994 report, had problem with USGS data (i.e., duplication of pages in report for water year 1992 for WQ data for Cedar Falls and Wapello). Based on old assessment, and based on levels of fish contaminants in samples of whole-fish carp that exceed 1/2 FDA action levels for PCBs and tech. chlordane, reach was assessed as FST its Class B uses.

For 1996 report, had no viols of Class B(WW) WQC in 18 samples from NASQAN site for water years 1993, 94 and 95 of DO/pH, NH₃, and toxic metals. Continue to assess fish consumption use as FST due to levels of chlordane that exceed 1/2 the FDA action levels in samples of whole fish carp from RAFT sampling in 1993 and 1995.

For 1998 report, continue to use the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST). [The USGS NASQAN WQ monitoring station at Cedar Falls was discontinued after the 1995 water year.] Also, continue to use results of RAFT trend monitoring downriver from Waterloo to assess support of fish consumption uses as FST as described in the above assessment for the 1996 report. This site was again sampled for the 1997 RAFT, but results are not yet available.* The Cedar River at Gilbertville was sampled for fish tissue in September 1995 as part of the USGS National Water Quality Assessment (NAWQA) program. The whole-fish composite sample of carp was analyzed for several organochlorine compounds, including chlordane, dieldrin, DDT, and PCBs. Levels of these contaminants in the whole-fish sample were all less than 1/2 of the respective FDA action levels, thus suggesting full support (FS) of fish consumption uses. Due to levels of these contaminants in whole-fish carp samples analyzed for RAFT monitoring in 1995 that exceed 1/2 of the FDA action level for chlordane, continue to assess support of fish consumption uses as fully supported/threatened (FST). For more information on the USGS sampling, see USGS fact sheet FS-027-97. Additional monitoring is needed to determine the status of the aquatic communities in this reach of the Cedar River. *Results for the 1997 RAFT fish contaminant monitoring program were received in August 1998. These results show that levels of all contaminants were less than 1/2 the respective FDA action levels in the two composite whole-fish carp samples collected and analyzed. Due to results of previous RAFT sampling that showed levels > 1/2 of action levels, continue to assess support of fish consumption uses as FST.

For the 2000 report: SUMMARY: Class B(WW) aquatic life uses were assessed as "fully supporting," and fish consumption uses were assessed as "fully supporting/threatened." EXPLANATION: Water quality of the Cedar River at Gilbertville was sampled from March 1996 to February 1997 as part of the USGS "National Water Quality Assessment Program." Twelve samples were analyzed for pH, dissolved oxygen, ammonia-nitrogen, and nitrite+nitrate; two of these samples were analyzed for a variety of toxic organic compounds and pesticides (for more information, see USGS Open-File Report 00-67 "Water quality assessment of the eastern Iowa basins: hydrologic and biologic data, October 1996 through September 1998" (Akers et al. 2000)). No violations of Class B(WW) state water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen occurred in the 12 samples; no violations of water quality criteria for toxic organic compounds or pesticides occurred in the two samples analyzed. Based on the lack of violations of state water quality criteria, the Class B(WW) aquatic life uses were assessed as "fully supported." Fish consumption uses remained assessed as "fully supported/threatened" based on results of USGS monitoring in 1995 and on results of EPA/DNR fish tissue (RAFT) monitoring in 1997 that showed that levels of contaminants are less than the respective FDA action levels but that contaminant levels in samples of whole-fish carp have historically been greater than 1/2 of respective FDA action levels (see above account for the 1998 report).

Rivers and Streams: Iowa-Cedar River Basin

*Cedar River Subbasin***CEDAR R**

-- Cedar Falls Impoundment

Waterbody ID No.: IA 02-CED-0050-L

Subsegment No.: 0

Subsegment Description: from dam to upper end of impoundment

Subsegment Length: 1.5 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring in 1997. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had no violations of Class B WQC; thus assess Class B uses as FS. One of the two samples analyzed for fecals exceeded the Class A WQC; thus, using BPJ, assessed Class A uses as FST.

For 1994 report, levels of fish contams in whole-fish carp samples did exceed FDA action level for dieldrin; same sample had > 1/2 FDA AL for tech. chlordane; due to use of whole-fish, assess fish consumption use as FST. No violations of Class B WQC; thus assess aquatic life uses as FST due to known threat from ag. NPS. No data available for fecal coliform bacteria; thus, Class A support not assessed.

For 1996 report, based on 1994 & 95 monitoring results for USGS NASQAN site at U.S. Hwy 20 bridge at Cedar Falls (site soon to be discontinued). Levels of fecal coliform exceeded Class A WQC in one of 4 valid samples collected in summers of 94 and 95. Due to lack of complete data (i.e., monthly or more frequent), use BPJ to assess support of primary contact recreation as PS. Whole- fish carp samples collected upstream from CF/WLoo for 95 RAFT had all contaminants < 1/2 FDA action levels; samples dstr CF/Wloo had chlordane = 1/2 FDA levels; thus, assess fish consumption uses as FST. No violations of Class B WQ criteria during 1994 & 95; thus assess aquatic life uses as FST, with threat being known impacts of agricultural and urban nonpoint sources. Agricultural and urbans NPSP was identified as source of high levels of bacteria.

For the 1998 report, used assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST); the USGS NASQAN WQ monitoring station at Hwy 20 in Cedar Falls is no longer monitored for WQ as part of the NASQAN program. Also, continued to use the assessment of support of the Class A primary contact recreation uses developed for the 1996 report (=PS); additional monitoring, however, should be conducted to confirm that levels of indicator bacteria (fecal coliforms) continue to suggest an impairment. Assessed support of the fish consumption uses as FS due to results of the 1997 RAFT fish contaminant monitoring at the fixed station RAFT site at Cedar Falls that showed levels of all contaminants less than 1/2 of respective FDA action levels. Because both the 1995 and 1997 RAFT samplings showed low levels of contaminants, upgraded the assessment of support of the fish consumption uses from FST to FS. Additional monitoring is needed to determine the status of the aquatic communities of this reach of the Cedar River.

For the 2000 report: SUMMARY: Support of neither the Class A (primary contact recreation) uses nor the Class B(WW) aquatic life were assessed due to lack of data. Fish consumption uses remain assessed as "fully supporting." EXPLANATION: The USGS NASQAN water quality monitoring station at Cedar Falls, upon which previous assessments of the Class A and Class B(WW) uses have been based, was discontinued in 1995. Given the lack of recent water quality data, assessments of support for these beneficial uses were not developed. Fish consumption uses remain assessed as "fully supporting" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1997 that showed levels of all contaminants in samples of whole-fish carp were below 1/2 of the respective FDA action levels and DNR levels of concern (see assessment for the 1998 report above).

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

CEDAR R

-- End C.Falls imp to W.Fk.Cedar

Waterbody ID No.: IA 02-CED-0060

Subsegment No.: 1

Subsegment Description: up. end C.Falls imp to Beaver Cr.

Subsegment Length: 5.6 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring in 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Not assessed

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of NASQAN monitoring and RAFT monitoring at Cedar Falls to assess both aquatic life and fish consumption uses as FST due to (1) no violations of aquatic life WQ criteria for conventional or toxic metal pollutants and (2) all contaminants in samples of whole-fish carp from upstr. Cedar Falls were < 1/2 FDA action levels.

For the 1998 report, continued to use assessment of support of the Class B(WW) aquatic life uses (=FST) and fish consumption uses (=FS) developed for the 1996 report. The USGS NASQAN station at Hwy 20 in Cedar Falls is no longer sampled as part of the NASQAN network. Results of the 1997 RAFT fish contaminant monitoring at the Cedar Falls site showed that levels of all contaminants were less than 1/2 of the respective FDA action levels in the two whole-fish composite samples of carp collected and analyzed; thus, assess support of fish consumption uses as fully supported (=FS).

For the 2000 report: SUMMARY: Support of neither the Class A (primary contact recreation) uses nor the Class B(WW) aquatic life were assessed due to lack of data. Fish consumption uses remain assessed as "fully supporting." EXPLANATION: The USGS NASQAN water quality monitoring station at Cedar Falls, upon which previous assessments of the Class A and Class B(WW) uses have been based, was discontinued in 1995. Given the lack of recent water quality data, assessments of support for these beneficial uses were not developed. Fish consumption uses remain assessed as "fully supporting" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1997 that showed levels of all contaminants in samples of whole-fish carp were below 1/2 of the respective FDA action levels and DNR levels of concern (see assessment for the 1998 report above).

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Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

CEDAR R

-- W.Fk. Cedar R. to Waverly dam

Waterbody ID No.: IA 02-CED-0070

Subsegment No.: 0

Subsegment Description: W.Fk. Cedar R. to Waverly dam

Subsegment Length: 14 miles

ASSESSMENT COMMENTS: DNR quarterly monitoring station. No recent WQ data; waterbody segment not assessed.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had no violations of Class B WQC; thus assessed as FS.

For 1994 report, used results of sampling in from 1989-91, but assessed as FST due to known threats from ag. NPS.

For 1996 report, not assessed due to age of monitoring data (i.e. > 5 years). For the 1998 report, continued to consider the Class B(WW) aquatic life uses as "not assessed" due to lack of recent information on the chemical or biological status of this river reach.

For the 2000 report: SUMMARY: Assessed support of the Class B(WW) aquatic life uses as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Results of DNR quarterly water quality monitoring in 1998 and 1999 from the DNR quarterly station located at Janesville showed no violations of WQ criteria to protect the Class B(WW) aquatic life uses: no violations of state water quality criteria conventional or toxic parameters (dissolved oxygen, pH, and ammonia-nitrogen) occurred in the 8 samples collected during this monitoring period; neither of the two samples analyzed for toxic metals showed violations of state criteria. Thus, the Class B(WW) aquatic life uses were assessed as "fully supported." This assessment was based on results of quarterly monitoring. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Janesville station began in October 1999. Due to lack of fish contaminant monitoring in this river reach, fish consumption uses remain "not assessed." Based on the limited water quality data that are available, water quality conditions appear to fully support the designated aquatic life uses. Additional water quality monitoring and/or follow-up biological monitoring would be useful for better determining the degree to which the Class B(WW) uses are supported.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

CEDAR R

-- Nashua Impound. to state line

Waterbody ID No.: IA 02-CED-0110

Subsegment No.: 1

Subsegment Description: Nahsua Impound to Dam #2 at Charles City

Subsegment Length: 60 miles

ASSESSMENT COMMENTS: Assessment is based on results of the following monitoring downstream from Charles City (1) DNR monthly WQ monitoring, (2) fish tissue (RAFT) monitoring in 1997, and (3) USGS / NAWQA fish tissue monitoring in 1995. See attached document.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had no violations of Class B WQC, and all fish contams were < 1/2 FDA action levels; thus assessed as FS.

For 1994 report, also had no violations of Class B WQC; no new fish contam. data. Due to known threats of ag. NPS, assessed as FST.

For 1996 report, once again, had no violations of Class B WQ criteria. RAFT sample from 1991 suggests no problems with fish contaminants. Due to presumed threats from NPS pollution, assess Class B uses as FST.

For the 1998 report, had no violations of Class B(WW) WQ criteria for either conventional or toxic contaminants in the 24 samples collected during the October 1995-September 1997 period; thus, assess support of the Class B(WW) aquatic life uses as FST. Because data from RAFT fish contaminant monitoring are more than five years old, and because results from the 1997 RAFT status sampling are not yet available, did not use RAFT data for assess fish consumption uses.* Results of fish tissue monitoring conducted in Sept. 1995 at Charles City for the USGS National Water Quality Assessment (NAWQA) program, however, were used to assess support of the fish consumption uses. The whole- fish composite sample of carp was analyzed for several organochlorine compounds including chlordane, dieldrin, DDT, and PCBs. Levels of all contaminants in the whole-fish sample were less than 1/2 of the respective FDA action levels, thus suggesting full support (FS) of fish consumption uses. Additional monitoring is needed to determine the status of the aquatic communities and habitats in this river reach. *Data for the 1997 RAFT fish contaminant monitoring were received in August 1998. Based on results of levels of contaminants in composite samples of fillets from channel catfish and smallmouth bass, continue to assess support of the fish consumption uses as FS due to all contaminant levels less than 1/2 of the respective FDA action levels. Relative to other RAFT sites, very few contaminants were detected in these samples. The level of mercury in the composite sample of smallmouth bass fillets (0.414 ppm), however, approached 1/2 of the action level for mercury (0.500 ppm). Levels of mercury in fish from this location have historically been relatively high compared to other locations in Iowa (see page 2-47 of the 1986 305(b) report: Water Quality in Iowa During 1984 and 1985). The level of mercury in the 1997 RAFT sample is, however, consistent with results of previous monitoring.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses are assessed as "fully supporting/threatened;" the fish consumption uses remain assessed as "fully supporting." EXPLANATION: The Class B(WW) aquatic life uses were assessed as "fully supporting / threatened" due to the lack of violations of water quality criteria in (1) the 24 samples analyzed for conventional and toxic parameters (dissolved oxygen, pH, and ammonia-nitrogen) and (2) the one sample analyzed for toxic metals at the DNR monthly monitoring station on the Cedar River at Carville during the 1998-1999 biennial period. These results suggest full support of the Class B(WW) uses. This station, however, was monitored for toxic organic compounds and pesticides from March 1996 to September 1998 as part of the USGS National Water Quality Assessment (NAWQA) program in the eastern Iowa river basins study unit (station 05457750). Results of this monitoring showed that one of 27 samples violated the Class B(WW) chronic water quality criterion for DDE. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), this one violation does not suggest an impairment of the aquatic life uses. Based on DNR's assessment methodology for Section 305(b) reporting, however, this violation suggests that the Class B(WW) aquatic life uses should be assessed as "fully supported / threatened." Fish consumption uses remain assessed based on results of USGS / NAWQA fish contaminant monitoring near Carville in September 1995 and on results of EPA/DNR fish tissue (RAFT) monitoring in 1997. Both samplings showed that levels of all contaminants were below 1/2 of the respective FDA action levels and DNR levels of concern (see assessment for the 1998 report above).

Cedar River Subbasin

CEDAR R

-- Nashua Impound. to state line

Waterbody ID No.: IA 02-CED-0110

Subsegment No.: 3

Subsegment Description: Rock Cr nr Orchard to state line

Subsegment Length: 60 miles

ASSESSMENT COMMENTS:

Assessment remains based on results of (1) Minnesota PCA monthly fixed monitoring station 3 miles S of Austin, MN, in 1996-97 and (2) fish tissue (RAFT) monitoring in 1995. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Fully
Fish Consumption	-- Threatened	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, the only WQC violated was for fecals: 13 samples were analyzed during the two-year period; 9 were collect. at approx average flows; 7 samples had levels of fecals > Class A WQC (=78% =NS). According to VanSteenburg (FO2), Hormel and Excel are two industries likely responsible for high levels of fecals in Cedar R; Hormel has its own WWTP and feedlot. Reach was ended at Mitchell Dam; i.e., fecals would possibly settle out in the Mitchell Impoundment.

For the 1994 report, 13 samples were analysed; only 6 were coll at approx average flows; of these, 2 had levels of FCB that exceeded Class A criterion. Due to lack of data points, use BPJ to assess as PS. (Note: Shell Rock R at Gordonsville had was sampled on the same dates as the Austin site but had much lower levels of bacteria.)

For the 1996 report, of the five samples analyzed for fecal coliforms (P31613), 3 samples exceeded the Class A WQ criterion; 2 of these samples, however, were affected by runoff (i.e., sample flow > mean monthly flow + 1 standard deviation). Thus, have 1 of three non runoff-affected samples in violation of the WQC. Thus, use BPJ to assess Class A use as FST. No violations of Class B WQC at Austin, MN station; thus, assess as FST due to presumed impact of NPS pollution. Results of monitoring for DO as part of Mitchell dam hydro project upstr at Halvorson Park and at Mitchell dam in summer 1994 suggest no problems with low DO. Levels of all contaminants < 1/2 FDA action levels in samples of carp and smallmouth bass fillest analyzed for the 1995 RAFT. Levels of mercury in both samples, however, closely approached 0.500 mg/kg (SMB: 0.481; carp: 0.441), thus, assess fish consumption uses as FST.

For the 1998 report, used results from (1) the monthly WQ monitoring station operated by the Minnesota Pollution Control Agency near Austin, MN, (2) the 1995 RAFT sampling near Osage, and (3) WQ monitoring at the Mitchell Dam hydropower project to develop assessments of use support. Assess support of the Class B(WW) aquatic life uses as FS due to lack violations of either conventional or toxic contaminants in the 18 samples collected during the Oct 95-Sept 97 period. Also, monitoring for dissolved oxygen at the Mitchell hydro project suggests no problems with low DO. Continue to assess fish consumption uses as FST as developed for the 1996 report (see above). The Class A primary contact uses were not assessed: no bacterial monitoring was conducted at the Austin sample site during summers of 1996 and 1997. Additional monitoring is needed to determine the status of the aquatic communities and habitats of this river reach.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) remain "not assessed," the Class B(WW) aquatic life uses remain assessed as "fully supporting," and the fish consumption uses remain assessed as "fully supporting / threatened." EXPLANATION: Due to problems with data acquisition (STORET), the assessments of support of the Class A and Class B(WW) uses developed for the 1998 report (above) were used for the 2000 report. Fish consumption uses remain assessed as "fully supporting / threatened" based on results of EPA/DNR fish tissue (RAFT) monitoring conducted west of Osage in 1995 (see above assessment for the 1995 report).

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin**MUD CR**

-- (aka Sugar Cr) mo - headwaters

Waterbody ID No.: IA 02-CED-0160

Subsegment No.: 1

Subsegment Description: mouth to confl w/ Mud Cr., Muscatine Co.

Subsegment Length: 18 miles

ASSESSMENT COMMENTS: Insufficient information for assessing Class B(WW) uses; waterbody segment not assessed. 1996 Biocriteria Site @ Hwy.6 Br.: Fish IBI= 55(good), BM-IBI= 39(fair).**SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:**

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

Not assessed for the 1996 report. Information from stream use assessment is not sufficient to develop an assessment of support of designated uses. Sugar Creek, however, is part of an ongoing DNR study to assess PS and NPS impacts and to determine to what degree this stream supports designated uses. Results from this study will not be available until mid-1997.

For the 1998 report, continued to consider the Class B(WW) aquatic life uses of this reach of Mud Creek as "not assessed." The DNR watershed study did not include this downstream reach of Mud Creek. Additional monitoring is needed to provide the information necessary for developing an assessment of support of the Class B(WW) uses.

2000: Results from a 1996 stream biocriteria sampling site located downstream of the Hwy. 6 bridge were used to determine B(WW) use support status. In the 1998 305b assessment, the sampling site was mistakenly thought to be located in Sugar Creek upstream from the confluence with Mud Creek.

MUD CR

-- (aka Sugar Cr) mo - headwaters

Waterbody ID No.: IA 02-CED-0160

Subsegment No.: 2

Subsegment Description: Mud Cr to trib S5,T78N,R1E Muscatine Co.

Subsegment Length: 18 miles

ASSESSMENT COMMENTS: Habsers/fshscrs: 26/12; 16/10. (1997v.) Fish IBI scores: 18,20,18,18,32,34. Downstr>Upstr. 1996 Biocriteria: Fish (1999v.) IBI= 43,38 (fair), 18,18,16,13 (poor); BM-IBI= 33,34 (fair), 20,20,27 (poor), 34(fair).**SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:**

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report. For the 1996 report, used results of two stream use assessments conducted in August 1991 in Muscatine County to assess support of B(LR) aquatic life uses as FST due to (1) habitat score (at least at one site) (26) much greater than overall average score (22) for all stream use assessments, (2) fish scores for both assessments (10, 12) equal to or better than 75th percentile for assessments where seining was used to collect fish. Mud Creek is part of an ongoing DNR study to evaluate PS and NPS impacts to more accurately assess whether stream supports designated uses; results of study will not be available until mid-1997. This study may alter the assessment developed for the 1996 305(b) report. For 1998 report, used results from 6 stream bioassessments of Mud Creek conducted in Sept. 1996. Fish community IBI scores ranged from 0%-75% of stream reference sites located in the same ecoregion. B(LR) aquatic life use assessed as non-supporting due to high level of diseased fish (11.4%) in Mud Cr. below Durant STP, mostly likely caused by high organic waste loading from the STP. Fish community health (IBI) scores were low in Mud Cr. adjacent to Durant and Wilton STP outfalls. Recovery to expected IBI levels occurred downstream from City of Wilton. Physical habitat scores at bioassessment locations ranked from poor to fairly good.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

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Cedar River Subbasin

SUGAR CR

-- mouth to headwaters

Waterbody ID No.: IA 02-CED-0170

Subsegment No.: 1

Subsegment Description: Mud Cr to Bennett Cr., Cedar Co.

Subsegment Length: 20 miles

ASSESSMENT COMMENTS: 1991 SUA: habscr/fshscr: 27/11. 1996 bioassessment: (fish)22 spp., 5 fams; 1996 Biocriteria: Fish IBI= 78(excellent), BM-IBI= 44(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of August 1991 stream use assessment 2 mi NE Lime City to assess support of B(LR) aquatic life uses as FST due to (1) habitat score (27) well above the overall average for stream use assessments (22), (2) comments on field sheet: "many riffle areas; several large rocks," (3) fish score (11) above 75th percentile for stream use assessments made with seines, and (4) field notes that indicate that seining was difficult due to rocky substrate. Sugar Creek is part of an ongoing DNR study to evaluate PS and NPS impacts to determine the degree to which the stream supports its designated uses. Results from this study will not be available until mid-1997.

For the 1998 report, used results of the two 1996 DNR watershed bioassessments in this reach to assess support of the Class B(LR) aquatic life uses as FS due to (1) presence of very diverse fish community of from 22 to 30 species from 5 to 8 families, (2) presence of all expected fish taxa (8 of 8) for the Southern Iowa Rolling Loess Prairies (47f) subcoregion at both sample sites, (3) presence of relatively large numbers of both smallmouth bass (151) and channel catfish (60), and (4) lack of violations of Class B(LR) WQ criteria.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 78 (excellent) and the BM-IBI score was 44 (fair). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

SUGAR CR

-- mouth to headwaters

Waterbody ID No.: IA 02-CED-0170

Subsegment No.: 2

Subsegment Description: Bennett Cr to trib S4,T80N,R2W Cedar Co.

Subsegment Length: 20 miles

ASSESSMENT COMMENTS: Habscr/fshscr: 16/11; Fish Community IBI (1997v.) Scores: 24,22,30; 1996 Biocriteria: Fish IBI (1999v.)= 29(fair), 34(fair), BM-IBI= 44(fair), 31(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of stream use assessment near Tipton to assess support of B(LR) aquatic life uses as PS due to (1) habitat score (16) much worse than overall average habitat score (22) for DNR stream use assessments, 1990-95, (2) field notes: "row crops up to banks," (3) habitat assessment indicates frequent channel straightening and frequent bank erosion. The Sugar Creek basin is part of an ongoing DNR study to evaluate PS and NPS impacts in order to determine the degree to which this stream supports its designated uses. Results from this study will not be available until mid-1997.

For 1998 report, used results of 3 stream bioassessments in Sugar Creek conducted as part of TMDL watershed assessment project in 1996. B(LR) aquatic life use assessed as partially supporting due to relatively high level of diseased fish (2.7%) found immediately downstream of Tipton East STP discharge. Diseased fish condition is probably caused by organic waste loading from the Tipton East STP. Fish community health (IBI) scores range from 0%-33% of scores from stream ecoregion reference sites. Physical habitat conditions at bioassessment locations rank from poor to fairly good.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI scores were 29 (fair) and 34 (fair); the BM-IBI scores were 44 (fair) and 31 (fair). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin**SUGAR CR**

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 02-CED-0175

Subsegment No.: 0

Subsegment Description: mouth (SW 1/4, S4, T80N, R2W, Cedar Co.) to headwaters

Subsegment Length: 10 miles

ASSESSMENT COMMENTS: 1996 Biocriteria: Fish IBI= 39(fair), BM-IBI= 43(fair).SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

2000 report: The assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 39(fair), and the BM-IBI score was 43(fair). The aquatic life use support status was assessed as partially supporting (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

ROCK CR

-- mouth (Cedar Co.) to headwaters

Waterbody ID No.: IA 02-CED-0180

Subsegment No.: 1

Subsegment Description: mouth to trib in S11,T80N,R3W Cedar Co.

Subsegment Length: 17 miles

ASSESSMENT COMMENTS: 1995 biocriteria: habscr/fshscr = 28/11 (shock) 1994 SUA: habscr/fshscr = 31/12 (seine); 1995 Biocriteria: Fish IBI= 71(good), BM-IBI= 67(good).SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully

Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Used data from one biocriteria sampling site in Cedar Co. Habitat and fish metrics from stream use assessment protocol were used to make use support determination. Habitat quality was very good. Good diversity of fish (25 species) including channel catfish and smallmouth bass. Fish were fairly abundant, but several species only represented by a few individuals. Results of DNR stream use assessment indicate above average habitat quality (score of 31 versus overall average of 22); notes on field sheet indicate "excellent habitat for SM bass and catfish/ carp.

For the 1998 report, used a review of the field sheet from the August 1994 DNR stream use assessment and the 1995 biocriteria sampling to upgrade the assessment of support of the Class B(WW) aquatic life uses from FST to FS due to (1) very diverse fish community (25 species from 6 families) for streams in the Southern Iowa Rolling Loess Prairies subecoregion, (2) presence of all the expected fish taxa (8 of 8) for streams in this subregion, (3) presence of the expected game fish species (channel catfish (8) and smallmouth bass (24)), and (4) indications on the DNR stream use assessment field sheet of high quality aquatic habitats with no channel alterations, very stable stream banks, very diverse substrates, and a riparian zone dominated by mature trees.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 71 (good) and the BM-IBI score was 67 (good). The aquatic life use support was assessed as fully supported (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

ROCK CR

-- mouth (Cedar Co.) to headwaters

Waterbody ID No.: IA 02-CED-0180

Subsegment No.: 2

Subsegment Description: trib S11,T80N,R3W to Co.Rd F28, Cedar Co

Subsegment Length: 17 miles

ASSESSMENT COMMENTS: Assessment is based on results of a DNR stream use assessment in August 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of August 1994 DNR stream use assessment to assess the B(LR) aquatic life uses as FST due to (1) habitat score (24) better than the overall average for DNR stream use assessments (22), (2) fish score (13) better than the 75th percentile for all DNR stream use assessments made with seines (10), and (3) relatively diverse fish community despite field notes that indicate "numerous rocks hindered effective seining."

For the 1998 report, used a review of the field sheet from the August 1994 DNR stream use assessment in Cedar County to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (12 species from 3 families) for streams in the Mississippi River portion of the Southern Iowa Rolling Loess Prairies subcoregion, (2) presence of a majority of the expected fish taxa (6 of 8) for streams in this subregion, and (3) indications on field sheet of several impacts to the physical characteristics of this stream, including frequent areas of pasturing impacts to riparian zone and frequent streambank erosion. Field sheet also indicates, however, very diverse substrates and several pool/riffle sequences, thus suggesting a potentially high quality stream. Results of seining likely influenced by difficulty of seining in rocky substrates. Additional monitoring with a different gear type (e.g., electrofishing equipment) is needed to better determine the status of the aquatic communities of this stream.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the August 1994 DNR stream use assessment in Cedar County. The results of the August 1994 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

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Cedar River Subbasin

BIG CR

-- mouth (Linn Co.) to headwaters

Waterbody ID No.: IA 02-CED-0200

Subsegment No.: 0

Subsegment Description: mo-> E Big Cr, S30,T84N,R5W, Linn Co.

Subsegment Length: 14 miles

ASSESSMENT COMMENTS: Assessment is based on (1) results of two 1996 fish surveys conducted by DNR Fisheries Bureau and (2) occurrence of a fish kill in April 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of two DNR stream use assessments and two assessments by DNR Fisheries (Sleeper) in July 1996 to assess the designated B(LR) aquatic life uses as FST due to (1) habitat scores (29 and 26) well above the overall median habitat score (22) for DNR stream use assessments, (2) fish scores (12 and 11) better than the 75th percentile score for DNR stream assessments made with seines, (3) fish surveys showing diverse populations with DNR Fisheries surveys showing presence of adult and juvenile smallmouth bass.

For the 1998 report, used a review of surveys conducted by DNR Fisheries Bureau at two locations on Big Creek in July 1996 to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of relatively diverse fish communities (species/families: 12/5; 13/6) for streams in the Mississippi River portion of the Southern Iowa Rolling Loess Prairies subcoregion (47f), (2) presence of a majority of the expected fish taxa (6 of 8 at both sites) for streams in this subregion, (3) indications on field notes of good habitat quality. These surveys produced good numbers of smallmouth bass and channel catfish, and the lower reach of Big Creek should be reviewed for designation as a Class B(WW) significant resource stream. Neither the 1991 DNR stream use assessments nor the 1996 surveys by the DNR Fisheries Bureau indicate significant impacts to the physical characteristics of this stream. A fish kill originating on East Big Creek near Springville on April 23, 1997, also affected a portion of Big Creek. Over the 2 miles of both streams affected, an estimated 11,000 fish were killed due to high level of ammonia related to the type of explosive used in a quarrying operation.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "partially supported." EXPLANATION: The assessment of the Class B(LR) aquatic life uses developed for the 1998 report ("fully supported / threatened"; see above) was based on results of two fish surveys conducted by the DNR Fisheries Bureau in July 1996. A fish kill, however, occurred in Big Creek on April 23, 1997; this kill was caused by high levels of ammonia from a quarrying operation (see assessment for the 1998 report above). According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the assessment of support of the Class B(LR) aquatic life uses was changed from "fully supported / threatened" to "partially supported."

BIG CR

-- General use segment; new segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 02-CED-0201

Subsegment No.: 0

Subsegment Description: East Big Cr (S30, T84N, R5W, Linn Co.) to headwaters

Subsegment Length: 6 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of fish kill in August 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996 or 1998 reports due to lack of water quality information.

For the 2000 report: SUMMARY: The general aquatic life uses were assessed as "partially supported." EXPLANATION: A fish kill occurred in the general use reach of Big Creek on August 29, 1998, approximately 2 miles NW of Springville in Linn County. The kill was caused by manure runoff from a dairy operation; approximately 2 miles of stream were affected. An estimated 2,600 fish were killed. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the general aquatic life uses of this reach of Big Creek were assessed as "partially supported."

Rivers and Streams: Iowa-Cedar River Basin

*Cedar River Subbasin***CRABAPPLE CR**

-- General use segment; new segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 02-CED-0207

Subsegment No.: 0

Subsegment Description: mouth (S1, T83N, R6W, Linn Co.) to headwaters

Subsegment Length: 9 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of a fish kill in August 1998. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports. Assessed for the appropriate stream use designation by DNR/EPD in the early 1990s.

For the 2000 report: SUMMARY: The general aquatic life uses of this stream were assessed as "partially supported." EXPLANATION: A fish kill occurred on Crabapple Creek on August 6, 1998. This kill was attributed to agricultural runoff of animal waste from a cattle lot. Approximately 3.2 miles of stream were affected; an estimated 26,500 fish were killed, with over 100 smallmouth bass reported killed. (A fish kill was also reported for this reach of Crabapple Cr. on June 26, 1995; the kill was caused by runoff from a feedlot; an estimated 11,800 fish were killed.) According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the general aquatic life uses of this river reach were assessed as "partially supported."

E BIG CR

-- mouth to headwaters

Waterbody ID No.: IA 02-CED-0208

Subsegment No.: 0

Subsegment Description: mouth to Hwy 151 crossing, Linn Co.

Subsegment Length: 4.1 miles

ASSESSMENT COMMENTS: Assessment is based on (1) results of fish surveys conducted by in 1996 by DNR Fisheries Bureau and (2) occurrence of a fish kill in April 1997. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. forms indicate above avg. habitat quality for a small headwater stream. No channel alterations observed and good diversity of substr. and pool/riffle sequences noted. Fair diversity of fish species observed. Seining was difficult due to abundance of rocky substr.

For 1996 report, used assessment of B(LR) aquatic life uses developed for the 1994 report (FST). Both sets of field notes from the August 1991 assessments mention murky or cloudy water and "isolated" influence of a WWTP.

For the 1998 report, used a review of the field sheets from the August 1991 DNR stream use assessments, and a review of results of a July 1996 stream survey by the DNR Fisheries Bureau, to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (12 species from 3 families in the 1996 survey) for streams in the Iowan Surface subcoregion (47c), (2) presence of a majority of the expected fish taxa (7 of 11) for streams in this subregion, and (3) indications of high quality aquatic habitats on the field sheets from the 1991 DNR stream use assessments, with very diverse substrates, sometimes numerous pool/riffle sequences, and no significant impacts to the physical characteristics of the stream. The 1991 field sheets do, however, note "murky water" and a potential influence of a WWTP. Additional monitoring should be conducted to better determine the impact of the WWTP on the aquatic communities of this stream. Neither the 1991 stream use assessments or the 1996 fisheries survey found centrarchids or ictalurids in this stream, and their absence may be related to a chemical water quality problem. Follow-up monitoring is needed. A fish kill was reported on this stream and on Big Creek on April 23, 1997. An estimated 11,000 fish were killed over a 2 mile reach of stream. The cause of the kill was apparently high levels of ammonia related to the type of explosive used at a quarrying operation along the stream.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "partially supported." EXPLANATION: The assessment of the Class B(LR) aquatic life uses developed for the 1998 report ("fully supported / threatened"; see above) was based on results of fish surveys conducted by the DNR Water Quality Bureau and DNR Fisheries Bureau in 1991 and 1996, respectively. A fish kill, however, occurred in East Big Creek on April 23, 1997; this kill was caused by high levels of ammonia from a quarrying operation (see assessment for the 1998 report above). According to DNR's revised assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the assessment of support of the Class B(LR) aquatic life uses was changed from "fully supported / threatened" to "partially supported."

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

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Cedar River Subbasin

INDIAN CR

-- mouth to headwaters

Waterbody ID No.: IA 02-CED-0210

Subsegment No.: 0

Subsegment Description: mouth to trib S20,T84N,R6W, Linn Co.

Subsegment Length: 16 miles

ASSESSMENT COMMENTS: Assessment is based on (1) 1996 fish survey by DNR Fisheries Bureau and (2) occurrence of fish kill in August 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of DNR stream use assessment in September 1991 to assess support of the B(LR) aquatic life uses as FST due to (1) habitat score (24) better than the overall average score (22) for DNR stream use assessments, (2) fish score (9) slightly lower than 75th percentile for DNR stream assessments made with seines (10), but field notes indicate that rocky substrate hindered seining, and (3) personal communication from DNR biologist Paul Sleeper that Indian Creek is a high quality stream with a very diverse fish population. Much of the watershed of Indian Creek is urban and impacts due to urban NPS runoff are likely.

For the 1998 report, used a review of the field sheet from the September 1991 DNR stream use assessment in Linn County to continue to assess support of the Class B(LR) aquatic life uses as FST due to results of the 1996 survey by the DNR Fisheries Bureau that shows a diverse fish community and high quality habitats in Indian Creek. Results of sampling of the fish community for the 1991 DNR stream use assessment are inconclusive due to problems with seining over rocky substrates (e.g., nearly twice the number of species were captured in the general use area as in the reach designated for Class B(LR) uses). The only significant impact to the physical characteristics of this reach in the 1991 stream use assessment was channel straightening in the Cedar Rapids/Marion urban area. The water quality of Indian and Otter creeks in Linn County is a focus of the Partners for Urban and Rural Environment (PURE) Water Quality Project sponsored by the Linn County Soil and Water Conservation District. This project involves a variety of educational activities, demonstration projects, and assistance for implementation of nonpoint source best management practices in these watersheds. Planned activities include biological stream monitoring, streambank stabilization, and riparian buffers. For more information on this project, call the Linn County Soil & Water Conservation District at 319/377-5960.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "partially supported." EXPLANATION: The assessment of the Class B(LR) aquatic life uses developed for the 1998 report ("fully supported / threatened"; see above) was based on results of a fish survey conducted by the DNR Fisheries Bureau in July 1996. A fish kill, however, occurred in Indian Creek at Marion on August 25, 1998. This kill occurred following the injection of approximately 90 gallons of termiticide at a residence. Approximately 2.25 miles of stream were affected; an estimated 43,300 fish were killed (a fish kill on Indian Creek at Cedar Rapids also occurred on May 24, 1994; no cause or source of the kill was identified). According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the assessment of support of the Class B(LR) aquatic life uses of this stream was changed from "fully supported / threatened" to "partially supported."

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

MC CLOUD RUN

-- mouth (Linn Co.) to headwaters

Waterbody ID No.: IA 02-CED-0218

Subsegment No.: 0

Subsegment Description: mouth to headwaters at Cedar Rapids, IA

Subsegment Length: 4.1 miles

ASSESSMENT COMMENTS: Assessment is based on fish kills caused by watermain breaks in summer 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For 1998 report, assessed support of general uses as impaired (=PS) due to two fish kills within one month in 1997 due to municipal watermain breaks that discharged chlorinated water to the stream. Fish kills occurred on June 25 and July 23, 1997. Impairment based on general use water quality criterion that states general use waters "shall be free from substances attributable to wastewater discharges or agricultural practices in concentrations or combinations which are acutely toxic to human, animal, or plant life."

For the 2000 report: SUMMARY: The general (aquatic life) uses remained assessed as "partially supported." EXPLANATION: The previous assessment of support for the general beneficial uses of this stream ("partially supported") was based on the occurrence of two fish kills during the 1996-1997 biennial assessment period (see assessment developed for the 1998 report above). The most recent fish kills occurred in summer 1997 and were both due to watermain breaks (see above; because these kills occurred within a 30-day period and were both due to the same cause, they are treated as one kill). According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the general aquatic life uses of this stream remain assessed as "partially supported" due to fish kills. This assessment is based only on the occurrence of fish kills. Additional chemical and/or biological monitoring is needed to improve this assessment.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

OTTER CR

-- mo. (Linn Co.) to confl of E&W Otter Crs

Waterbody ID No.: IA 02-CED-0230

Subsegment No.: 0

Subsegment Description: mouth (Linn Co.) to confl w/ E & W Otter creeks

Subsegment Length: 5.5 miles

ASSESSMENT COMMENTS: Assessment is based on results on a DNR stream use assessment in August 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of DNR stream use assessments in July 1991 and August 1994 to assess B(LR) aquatic life uses as FST due to (1) habitat scores (24 & 32) better than overall average habitat score for DRN stream use assessments (the score of 32 at Toddville was one of the best habitat scores of all stream use assessments conducted between 1990 and 1995), (2) field notes indicating large amount of rock, large pooled areas, (3) fish score at lower site (14) much better than 75th percentile for stream assessments made with seines (10), and (4) personal communication from Paul Sleeper, DNR Fisheries Biologist, of the high quality of this stream.

For the 1998 report, used a review of field sheets from the 1991 and 1994 DNR stream use assessments, and field notes from the 1988 DNR fish survey at Toddville, to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of moderately diverse fish communities (13 species from 4 families in 1994; 10 species from 5 families in 1988) for streams in the Iowan Surface subecoregion, including several sensitive species such as rosyface shiner, northern hogsucker, slender madtom, smallmouth bass, and rainbow darter, (2) presence of a majority of the expected fish taxa (7 of 11 in both 1988 and 1994), and (3) indications on the SUA field sheets of above average to exceptional habitat quality (see above assessment developed for the 1996 report). Additional monitoring is needed to better determine the status of the aquatic communities of this stream. Neither field sheets from 1991 & 1994 nor field notes from 1988 suggest any impacts to either the water quality or physical characteristics of this stream. More thorough sampling would likely show this stream to fully support its Class B(LR) uses. The water quality of the Otter Creek and Indian Creek watersheds in Linn County is the focus of the Partners for Urban and Rural Environment (PURE) Water Quality Project sponsored by the Linn County Soil and Water Conservation District. This project involves a variety of educational activities, demonstration projects, and assistance for implementation of nonpoint source best management practices in these watersheds. Planned activities include biological stream monitoring, streambank stabilization, and riparian buffers. For more information on this project, call the Linn County Soil and Water Conservation District at 319/377-5960.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the August 1994 DNR stream use assessment in Linn County. The results of the August 1994 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

E. OTTER CR

-- mouth (Linn Co.) to headwaters

Waterbody ID No.: IA 02-CED-02303

Subsegment No.: 0

Subsegment Description: mouth to trib S16,T85N,R7W Linn Co.

Subsegment Length: 7.6 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish surveys conducted by DNR Fisheries Bureau in 1997 and students from Cornell College in 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully

Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the May 1992 DNR stream use assessment to assess the B(LR) aquatic life uses as FST due to (1) habitat score (24) better than overall average score (22) for DNR stream use assessments and (2) fish score (10) equal to the 75th percentile score for collections made with seines.

For the 1998 report, used a review of the field sheet from the May 1992 DNR stream use assessment, the 1996 fish surveys at two sites by DNR Fisheries, and the results of fish surveys conducted by Cornell College to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of a relatively diverse fish community (from 11 to 19 species and from 4 to 5 families at sites sampled) for streams in the Iowan Surface subcoregion (47c), (2) presence of nearly all the expected fish taxa (9 of 11) for streams in this subregion, and (3) indications on the 1992 SUA field sheet of above average habitat quality, with no significant impacts to the chemical or physical characteristics of this stream noted. In addition, stream supports populations of sensitive species such as southern redbelly dace, Ozark minnow, rosyface shiner, smallmouth bass, and rainbow darter.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based primarily on (1) two 1996 fish surveys conducted by the DNR Fisheries Bureau and (2) results of fish surveys conducted in 1997 by students at Cornell College, Mt. Vernon.

W. OTTER CR

-- mouth (Linn Co.) to headwaters

Waterbody ID No.: IA 02-CED-02307

Subsegment No.: 0

Subsegment Description: mouth to trib S6,T85N,R7W Linn Co.

Subsegment Length: 9.6 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish surveys by DNR Fisheries Bureau in 1996 and students from Cornell College in 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully

Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used result of DNR stream use assessment in May 1992 to assess the B(LR) aquatic life uses as FST due to (1) habitat score (24) better than the overall average score (22) for DNR stream use assessments, (2) fish score (11) better than 75th percentile score (10) for assessments made with seines, (3) presence of juvenile smallmouth bass in fish collection, and (4) professional judgement of Paul Sleeper, DNR Fisheries Biologist.

For the 1998 report, used a review of (1) the field sheet from the May 1992 DNR stream use assessment, (2) summaries of three surveys on W. Otter Cr. by DNR Fisheries in July 1996, and (3) results of sampling by Cornell College in 1997 to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of a relatively diverse fish community (up to 20 species from 6 families) for streams in the Iowan Surface subcoregion, (2) presence of nearly all the expected fish taxa (up to 10 of 11) for streams in this subregion, and (3) indications on the 1992 SUA field sheet of above average habitat quality. In addition this stream, similar to others in the Otter Creek system, supports populations of sensitive species including southern redbelly dace, Ozark minnow, rosyface shiner, slender madtom, smallmouth bass, and rainbow darter.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based primarily on (1) three 1996 fish surveys conducted by the DNR Fisheries Bureau and (2) results of fish surveys conducted in 1997 by students at Cornell College, Mt. Vernon.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

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Cedar River Subbasin

BEAR CR

-- mouth to headwaters

Waterbody ID No.: IA 02-CED-0231

Subsegment No.: 0

Subsegment Description: mouth to Wildcat Cr., Benton Co.

Subsegment Length: 9.9 miles

ASSESSMENT COMMENTS: 1991 SUA: 28/10 (DNR stream use assessment); 1995 biocriteria: habscr/fshscr=25/13 (shock), Fish IBI= 69(good), BM-IBI= 61(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1996: Used data from one biocriteria sampling location in Benton County. Fish and habitat data metrics from stream use assessment protocol were used to make use support determination. Results of July 1991 DNR stream use assessment support assessment based on biocriteria sampling; i.e., habitat score (28) much better than overall average score for DNR stream use assessments, fish score (10) equal to the 75th percentile score for stream use assessments made with seines, and field notes that state "very nice rock riffles and pooled areas."

For the 1998 report, used a review of the field sheet from the 1991 DNR stream use assessment, and the results of the 1995 DNR biocriteria sampling, to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of relatively diverse fish community (22 species from 5 families (1995 biocriteria sampling)) for streams in the Iowan Surface subecoregion, (2) presence of all the expected fish taxa (11 of 11) for streams in this subregion, and (3) indications on the field sheet from the 1991 DNR stream use assessment of above average habitat quality and riparian conditions, with no significant impacts to the physical characteristics of the stream.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 69 (good) and the BM-IBI score was 61 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

BEAR CR

-- mouth to headwaters

Waterbody ID No.: IA 02-CED-0260

Subsegment No.: 0

Subsegment Description: mouth to ??? [not yet designated in WQS]

Subsegment Length: 15 miles

ASSESSMENT COMMENTS: 1991 SUA: habscrs/fshscrs=22/11, 25/13, 24/11 (seine); 1996 Biocriteria: Fish IBI= 78(excellent), BM-IBI= 76(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. forms indicate fairly good habitat quality. Good diversity of substr. and several pool/riffle sequences observed at two of three locations. Pasture use impacts evident at all three locations. Moderate diversity of fish and generally good abundances observed.

For the 1996 report, used the assessment of aquatic life uses developed for the 1994 report (FST).

For the 1998 report, used results of the 1996 DNR biocriteria sampling to upgrade the assessment from FST to FS due to (1) presence of an exceptionally diverse fish community (28 species from 6 families, (2) presence of environmentally sensitive species, including American brook lamprey, Ozark minnow, black redbreast, and banded darter, and (3) presence of all expected fish taxa for Class B(LR) streams in the Iowan Surface subecoregion (11 of 11). Field sheets from the July 1991 DNR stream use assessment indicate average to above average aquatic habitats and riparian conditions. In biological terms, a very high quality stream in Iowa.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 78 (excellent) and the BM-IBI score was 76 (good). The aquatic life use support was assessed as fully supported (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

LIME CR

-- mouth to headwaters

Waterbody ID No.: IA 02-CED-0270

Subsegment No.: 1

Subsegment Description: mo to trib S1,T87N,R10W Buchanan Co.

Subsegment Length: 16 miles

ASSESSMENT COMMENTS: Avg. Habschr/fshscr=26/12 (shock). Biocriteria samples in May, Aug & Nov 1996 and Apr, Aug & Nov 1997. Avg. 1994-1998 Biocriteria: Fish IBI= 77(excellent), BM-IBI= 72(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996 report: Used data from one seasonal biocriteria sampling site at Lime Creek (Buchanan) County park. Fish and habitat data metrics from stream use assessment protocol were applied to the data to make use support determination.

For the 1998 report, used results from 6 DNR biocriteria samplings during 1996 and 1997 to assess support of the Class B(WW) aquatic life uses as FS. Biocriteria sampling shows a very diverse fish community with over 20 species from 5 families, presence of all the expected fish taxa for Class B(LR) streams in the Iowan Surface subcoregion, and presence of smallmouth bass. This stream is relatively small, however, compared to other Class B(WW) streams and rivers, and the habitat to support adult game fish (i.e, smallmouth bass) is present but in limited amounts. Although pasturing impacts to the riparian zone have been noted in the past, the primary limitation to Class B(WW) uses is the naturally-occurring small size of the stream.

For the 2000 report, the assessment was based on results of a total of six biocriteria samplings conducted in 1996 and 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The average F-IBI score for the six samplings was 77 (excellent) and the average BM-IBI score was 72 (good). The aquatic life use support was assessed as fully supported (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

WOLF CR

-- mouth (Black Hawk Co.) to Twelvemile Cr.

Waterbody ID No.: IA 02-CED-0300

Subsegment No.: 0

Subsegment Description: mouth to Twelvemile Cr., Tama Co.

Subsegment Length: 21 miles

ASSESSMENT COMMENTS: Assessment is based on results of USGS/NAWQA monitoring of water quality and fish tissue near Dysart. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Reach not assessed with fixed monitoring data for 1992 report.

For 1994 report, had no violations of Class B WQC; thus assess support of uses as FST due to known threats from agricultural nonpoint sources. Stream fish surveys conducted at Tama-Benton county line show good habitat and a locally very diverse fish community. Thus, despite PS assessment given to reach of Wolf Creek upstream from Twelvemile Cr, I assessed the lower B(WW) reach as FST.

For 1996 report, used assessment of support of B(WW) aquatic life uses developed for the 1994 report (FST).

For 1998 report, continued to use assessment of support of the Class B(WW) aquatic life uses developed for the 1994 report (=FST). Although the assessments of stream fish communities were conducted more than five years ago, the DNR quarterly WQ monitoring station at LaPorte City was monitored within the last five years; thus, consider the assessment category as "monitored." Also used results of fish tissue monitoring conducted in Sept. 1995 near Dysart for the USGS National Water Quality Assessment (NAWQA) program. The whole fish composite sample of carp was analyzed for several organochlorine compounds, including chlordane, dieldrin, DDT, and PCBs. Levels of all contaminants in the whole-fish sample were less than one-half the FDA action levels, thus suggesting full support (FS) of the fish consumption uses. For more information, see USGS Fact Sheet FS-027-97 (March 1997). In order to better assess support of the Class B(WW) aquatic life uses, used results of a DNR fish survey from April 1990 to support assessment as FST due to (1) presence of a moderately diverse fish community (13 species from 5 families) for streams in the Iowan Surface subecoregion, (2) presence of the expected game fish species (smallmouth bass, although only one 9" individual collected) for streams in this subregion, and (3) presence of a majority of the expected fish taxa (8 of 11) for streams in this region, with all the expected families present (missing taxa were three cyprinid species). No DNR stream use assessments were conducted in this segment of Wolf Creek; thus, information on threats to continued support is lacking. Additional monitoring is needed on this lower segment of Wolf Creek to update this assessment, better determine the status of the aquatic communities and habitats, and to determine any significant threats to the continued support of the Class B(WW) uses.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses are assessed as "partially supported;" the fish consumption uses remain assessed as "fully supported." EXPLANATION: The DNR quarterly water quality monitoring station on Wolf Creek at LaPorte City, upon which previous (1994, 1996 and 1998) assessments of the Class B(WW) uses were based, has not been monitored since the 1992-93 biennial period. These data are now considered too old (greater than five years) for developing a valid assessment of support of the Class B(WW) uses. As part of DNR's expanded water quality monitoring program, monthly monitoring at the LaPorte City station began in October 1999. Results from this monitoring will allow development of an updated assessment of support of beneficial uses for the 2002 report. The assessment of support of the Class B(WW) uses for the 2000 report is based on results of monitoring conducted on Wolf Creek near Dysart from March 1996 to September 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05464220). This monitoring showed (1) no violations of Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen in the 54 samples collected, (2) a single violation of the Class B(WW) chronic water quality criterion for chlorpyrifos in the 52 samples analyzed, and (3) three violations of the Class B(WW) chronic water quality criterion for dieldrin in 52 samples analyzed. Although the results for pH, dissolved oxygen, and ammonia-nitrogen suggest full support of the aquatic life uses, the results of pesticide monitoring (dieldrin) indicate only partial support of these uses. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), the one violation of the chronic criterion for chlorpyrifos does not suggest an impairment of the aquatic life uses. The EPA guidelines, however, specify that more than one violation of a water quality criterion for a toxic contaminant within a three-year period indicates that the aquatic life uses are not fully supported. Thus, the three violations of the chronic criterion for dieldrin (6% violation) indicate "partial support" of the Class B(WW) uses. Fish consumption uses remain assessed as "fully supported" based on results of the USGS/NAWQA fish tissue monitoring in September 1995 that showed levels of organochlorine contaminants were less than 1/2 of the respective FDA action levels and DNR levels of concern (see assessment for the 1998 report above).

Rivers and Streams: Iowa-Cedar River Basin

*Cedar River Subbasin***BLACK HAWK CR**

-- mouth (Black Hawk Co.) to North Black Hawk Cr.

Waterbody ID No.: IA 02-CED-0370

Subsegment No.: 1

Subsegment Description: mouth (Black Hawk Co.) to Hwy 58 at Hudson

Subsegment Length: 18 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring near Hudson in 1998. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For 1996 report, used results from the DNR quarterly monitoring stations near Waterloo to (1) assess support of the Class A (primary contact) uses as PS due to 3 of 4 samples exceeding the water quality criterion for fecal coliform bacteria and (2) assess support of the Class B(WW) aquatic life uses as FST due to absence of violations of any Class B(WW) water quality criteria in the 8 samples collected over a two-year period. High levels of fecal coliforms attributed primarily to agricultural nonpoint sources and secondarily to urban nonpoint sources and natural sources.

For the 1998 report, continue to use the assessment of support of the Class A primary contact recreation uses developed for the 1996 report (=PS). This assessment, however, was based on monitoring conducted during the October 1993 to September 1995 period; additional monitoring is needed to verify that the high levels of fecal coliform bacteria continue to occur. Used results of DNR biocriteria sampling in July 1996 to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of a relatively diverse fish community (20 species from 5 families), (2) presence of most (9 of 11) of the expected fish taxa for streams in the Iowan surface subcoregion (the taxa missing are small stream species not expected in the mid-sized and larger streams such as this reach of Black Hawk Creek), and (3) presence of game fish species (channel catfish; also 1 smallmouth bass).

For the 2000 report: **SUMMARY:** The Class A (primary contact recreation) uses were considered "not assessed." The Class B(WW) aquatic life uses remained assessed as "fully supported / threatened." The fish consumption uses were assessed as "fully supported." **EXPLANATION:** The DNR quarterly water quality monitoring station on Black Hawk Creek near Waterloo, upon which previous (1994 and 1996) assessments of support of the Class A and Class B(WW) uses were based, has not been monitored since the 1994-95 biennial period. These data are now considered too old (greater than five years) for developing a valid assessment of support of the Class B(WW) uses. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Waterloo station began in October 1999. Results from this monitoring will allow development of an updated assessment of support of beneficial uses for the 2002 report. The Class B(WW) uses remain assessed as "fully supported / threatened" based on results of DNR biocriteria sampling in this stream reach in July 1996 (see assessment for the 1998 report above). Fish consumption uses were assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1998 near Hudson that showed levels of contaminants in composite samples of filets from channel catfish were less than 1/2 the respective FDA action levels and DNR levels of concern. Levels of the primary contaminants of concern in the 1998 sample were as follows (all values are wet weight): technical chlordane: 0.055 mg/kg; dieldrin: 0.096 mg/kg; PCB-Aroclor 1260: 0.016 mg/kg (Aroclors 1248 and 1254 were not found above detection levels); and mercury: 0.102 mg/kg.

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

BLACK HAWK CR

-- mouth (Black Hawk Co.) to North Black Hawk Cr.

Waterbody ID No.: IA 02-CED-0370

Subsegment No.: 2

Subsegment Description: Hwy 58 at Hudson to N. Black Hawk Cr.

Subsegment Length: 18 miles

ASSESSMENT COMMENTS: 1996 biocriteria: 20 fish spp., 5 fams., Fish IBI= 51(good), BM-IBI= 50(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 report.

For the 1998 report, used results of the July 1996 DNR biocriteria sampling 2.5 mi SW of Hudson to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of a relatively diverse fish community (20 species from 5 families) that contains most of the expected taxa for streams in the Iowan Surface subcoregion (9 of 11), (2) no violations of Class B(WW) WQ criteria in the sample collected during biocriteria sampling, (3) no violations of Class B(WW) WQ criteria in samples collected for DNR quarterly monitoring between October 1993 and September 1995, and (4) presence of game fish species (channel catfish; also 1 smallmouth bass). Relatively few game fish captured, thus suggesting a potential habitat limitation in this relatively small Class B(WW) stream.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 51 (good) and the BM-IBI score was 50 (fair). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin**BEAVER CR**

-- mouth to South Beaver Cr.

Waterbody ID No.: IA 02-CED-0400

Subsegment No.: 0

Subsegment Description: mouth to S. Beaver Cr, Butler Co.

Subsegment Length: 21 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR quarterly water quality monitoring near Cedar Falls in FY98 & 99. See attached document for details.**SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:**

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates fair habitat quality for B(WW) stream in this region. Sandy run habitat was most dominant type observed. Best cover for fish consisted of numerous woody debris snags. Rel. good riparian conditions and meandering stream channel are also positive attributes. Frequent stream bank erosion noted is a symptom of susceptibility to high flow. Fair diversity of fish observed, but generally low numbers of fish caught. Size of stream and turbidity may have reduced sampling effectiveness. Data from quarterly monitoring station shows no violations of Class B(WW) WQS. For the 1996 report, used assessment of Class B(WW) aquatic life uses developed for the 1994 report (=FST).

For the 1998 report, used a review of the field sheet from the July 1992 DNR stream use assessment conducted near Butler/ Black Hawk county line to continue to assess support of the Class B(WW) aquatic life uses due to (1) moderately diverse fish community (11 species from 4 families) for streams in the Iowan Surface subcoregion (47c), (2) presence of a majority of the expected fish taxa (6 of 11) for streams in this subregion, and (3) indications of field sheet of above average quality of aquatic habitats and riparian zone, with the only significant threat to the physical characteristics of the stream being streambank erosion (although riparian zone is protected by buffer of mature trees). Despite indications of full support, relatively few fish species were captured, and numbers per species were relatively low. One expected game fish species (smallmouth bass) was present in low numbers, but habitat to support this game fish species was limited. Additional sampling is needed at other locations in this Class B(WW) reach of Beaver Creek to better determine the status of the aquatic communities and habitats.

For the 2000 report: SUMMARY: Assessed support of the Class B(WW) aquatic life uses as "fully supported / threatened." Fish consumption uses remained "not assessed." EXPLANATION: The previous assessment of support of the Class B(WW) uses ("fully supported / threatened"; see assessment for the 1998 report above) was based primarily on the results of a DNR stream use assessment in July 1992. The results of this stream assessments, however, are greater than five years old and are thus considered too old to be useful for assessing current water quality conditions. Results of DNR quarterly water quality monitoring from the station located approximately 3.5 miles NNW of Cedar Falls during the 1998-1999 biennial period showed no violations of water quality criteria to protect the Class B(WW) aquatic life uses: no violations of state water quality criteria conventional or toxic parameters (dissolved oxygen, pH, and ammonia-nitrogen) occurred in the 8 samples collected during this monitoring period; neither of the two samples analyzed for toxic metals showed violations of these criteria. As noted in the previous (1998) assessment, however, this portion of Beaver Creek has threats to full support of aquatic life uses. Although water quality conditions appear to fully support the designated aquatic life uses, follow-up biological monitoring is needed to determine the status of the aquatic communities and habitats and to better determine the degree to which the Class B(WW) uses are supported. This assessment was based on results of quarterly monitoring. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Cedar Falls station began in October 1999.

S BEAVER CR

-- mouth to headwaters

Waterbody ID No.: IA 02-CED-0430

Subsegment No.: 1

Subsegment Description: mo->N Fk S Beaver Cr S28,T89,R17W Grundy

Subsegment Length: 17 miles

ASSESSMENT COMMENTS: 1996 biocriteria: fish, 17 spp., 5 fams., Fish IBI= 53(good), BM-IBI= 65(good).**SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:**

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

This subsegment was created in 1998 due to monitoring results that indicated a different aquatic life use assessment from that based on a 1992 DNR stream use assessment conducted approximately 2 stream miles upstream from the confluence with the N. Fk. of S. Beaver Cr. (see assessment for S. Beaver Cr., Subsegment 2). For the 1998 report, used results of the DNR biocriteria monitoring conducted in Grundy County in July 1996 approximately 2.5 mi SW of Parkersburg to assess support of the Class B(LR) aquatic life uses as FS. This sampling showed a relatively diverse fish community of 17 species from 5 families that contained nearly all (10 of 11) of the expected fish taxa. No violations of Class B(LR) water quality criteria occurred in the sample collected during biocriteria sampling.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

M FK S BEAVER CR

-- mouth to headwaters

Waterbody ID No.: IA 02-CED-0432

Subsegment No.: 0

Subsegment Description: mouth to headwaters at Ackley, IA

Subsegment Length: 18 miles

ASSESSMENT COMMENTS: Assessment is based on repeated occurrence of fish kills (Sept 7, 1991, August 17, 1994, August 10, 1995, Sept. 12, 1997). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Since 1991, four fish kills have been reported for the reach of this stream near Ackley. Kills in September 1991 and September 1997 were attributed caused by discharges from a local industry. Kills in August 1994 and August 1995 were caused by "silage runoff." These relatively frequent fish kills suggest an impairment that affects the ability of this stream to fully support an aquatic community. Thus, conditions in this stream violate the WQS that general use waters "be free from substances, attributable to wastewater discharges or agricultural practices, in concentrations or combinations which are acutely toxic to human, animal, or plant life" (IAC 1990, Chapter 61.3(2)). The general aquatic life uses for this stream were assessed as "partially supported." Follow-up monitoring is needed to determine the status of the aquatic communities of this stream and to determine the degree to which the general aquatic life uses may be impaired.

For the 2000 report: SUMMARY: The general (aquatic life) uses remain assessed as "partially supported." EXPLANATION: The previous assessment of support for the general beneficial uses of this stream ("partially supported") was based on the occurrence of repeated fish kills from 1991 to 1997 (see assessment developed for the 1998 report above). The most recent kill occurred in September 1997. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the general aquatic life uses were assessed as "partially supported."

N BEAVER CR

-- mouth-Butler to headwaters

Waterbody ID No.: IA 02-CED-0435

Subsegment No.: 0

Subsegment Description: mouth to Fockler Cr. Butler Co.

Subsegment Length: 5.3 miles

ASSESSMENT COMMENTS: Assessment is based on results of a DNR stream use assessment in October 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 report.

For the 1998 report*, used a review of the field sheet from the October 1994 DNR stream use assessment NW of Austinville in Butler County to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (13 species from 3 families) for streams in the Iowan Surface subcoregion (47c) and (2) presence of nearly all the expected fish taxa (9 of 11) for streams in this subregion. The field sheet indicates relatively poor quality habitat due to extensive channelization, with few pool/riffle sequences present and little diversity of substrate. This assessment, however, was conducted at the Class B(LR)/general boundary; thus, habitat conditions can be expected to be marginal for the Class B(LR) use designation. Despite the habitat alterations, the fish community present indicates that the Class B(LR) uses are fully supported. [*The field sheet for the October 1994 DNR stream use assessment was found in 1998; this field sheet had been misfiled with field sheets for other stream use assessments in the Iowa/Cedar River basin.]

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the October 1994 DNR stream use assessment in Butler County. The results of the October 1994 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin**DRY RUN CR**

-- General use segment. New segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 02-CED-0462

Subsegment No.: 0

Subsegment Description: Hwy 188 (N line, S27, T93N, R14W, Bremer Co.) to headwaters

Subsegment Length: 12 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of a fish kill in August 1998. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

"General Use" waterbody; not assessed for the 1994, 1996 or 1998 reports.

For the 2000 report: SUMMARY: The general aquatic life uses of this stream were assessed as "partially supported." EXPLANATION: A fish kill occurred in this stream reach on August 7, 1998, approximately 3 miles southeast of Nashua in Bremer County. The kill was attributed to agricultural runoff of animal waste. No counts of dead fish were made. Approximately five miles of stream were affected. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the general aquatic life uses of this stream were assessed as "partially supported."

LITTLE CEDAR R

-- mouth to Burr Oak Cr.

Waterbody ID No.: IA 02-CED-0470

Subsegment No.: 0

Subsegment Description: mouth to Iowa/Minnesota state line

Subsegment Length: 40 miles

ASSESSMENT COMMENTS: 1995 SUA: habscr/fshscr=31/14 (shock); 1995 biocriteria: 29/12 (shock), Fish IBI= 85(excellent), BM-IBI= 79(very good).SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully

Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Used information from stream use assessment site in Floyd Co. to make designated use support determination. Also used sampling information from one biocriteria site in Floyd Co. (Colwell Park). Assessment information and biocriteria data indicate the stream supports a good diversity of fish and has fairly good habitat. Habitat degradation, in the form of channel widening, stream bank destabilization and excessive sediment is a threat to biological health of stream. Not assessed for the 1994 report.

For the 1998 report, used a review of the field sheet from the August 1995 DNR stream use assessment at Colwell Park, and the results of the October 1995 DNR biocriteria sampling near the same location, to upgrade support of the Class B(WW) aquatic life uses from FST to FS due to (1) presence of a very diverse fish community (species/families, SUA->BC: 22/5; 31/5) for streams in the Iowan Surface subecoregion (47c), (2) presence of nearly all the expected fish taxa (SUA: 9 of 11; BC: 10 of 11) for streams in this subregion, (3) presence of two of the expected game fish species (smallmouth bass (32 collected) and channel catfish (15 collected)), (4) indications of the SUA field sheet of high quality aquatic habitats and riparian area (although sampling was conducted in a park area) with no significant threats to continued support of the Class B(WW) uses noted, and (5) presence of a variety of environmentally sensitive species (e.g., largescale stoneroller, rosyface shiner, northern hogsucker, smallmouth bass, Iowa darter, banded darter, and logperch).

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 85 (excellent) and the BM-IBI score was 79 (very good). The aquatic life use support was assessed as fully supported (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

LITTLE CEDAR R

-- Burr Oak Cr. to state line

Waterbody ID No.: IA 02-CED-0480

Subsegment No.: 0

Subsegment Description: Burr Oak Cr. (Mitchell Co.) to Iowa/Minnesota state line

Subsegment Length: 22 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) four DNR stream use assessments in August 1995 and (2) an October 1995 DNR biocriteria sampling. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of four DNR stream use assessments at three locations to assess support of the B(WW) aquatic life uses as FST due to (1) habitat scores (26, 26, 24, 25) above the overall average score (22) for DNR stream use assessments, (2) fish scores (14, 13, 13 (electrofishing) and 9 seining) better than the 75th percentile score (12) for stream assessments made with electrofishers and slightly below for assessments made with seines, and (3) exceptional diversity of fish species; e.g., 22, 23, 16 including fair numbers of adult and juvenile smallmouth bass.

For the 1998 report, used a review of the field sheets from the three August 1995 DNR stream use assessments in Mitchell County to continue to assess support of the Class B(WW) uses as FST due to (1) presence of very diverse fish communities (species/families, dstr->upstr: 22/4; 23/5, 17/4) for streams in the Iowan Surface subcoregion (47c) with several environmentally sensitive species at each site, including rosyface shiner, northern hogsucker, smallmouth bass, fantail darter, banded darter, and logperch, (2) presence of a strong majority of the expected fish taxa (8/11; 9/11; 8/11) for streams in this subregion, (3) indications of good quality aquatic habitats at most sites, with diverse substrates and several pool/riffle sequences, and (4) presence of the expected game fish species (smallmouth bass) at all sites, with both juveniles and adults (from 12" to 15" TL) present. Field sheets indicate, however, that frequent pasturing the stream corridor, frequent streambank erosion, and excessive widening of the stream channel are threats to the continued support of the Class B(WW) uses.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on results of three August 1995 DNR stream use assessments in Mitchell County. Results of a fourth DNR stream use assessment conducted in August 1995 (at Colwell Park in Floyd County) were not included in the 1998 assessment. Results of this assessment strongly support the assessment of the aquatic life uses as "fully supported" with (1) a very diverse fish community (18 spp. from 5 families) with several environmentally sensitive species including rosyface shiner, northern hogsucker, smallmouth bass, fantail darter, banded darter, and logperch; (2) nearly all of the expected nongame taxa for Iowan Surface (subcoregion 47c) streams present (10 of 11); (3) indications of good quality aquatic habitats with diverse substrates and several pool/riffle sequences, and (4) presence of expected game fish species (smallmouth bass and channel catfish). The results of the August 1995 DNR stream use assessments-upon which the previous assessment of the Class B(LR) uses was based-are approximately 5 years old and thus can be used to assess current water quality conditions. Fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this river reach.

Rivers and Streams: Iowa-Cedar River Basin

*Cedar River Subbasin***BURR OAK CR**

-- mouth (Mitchell Co.) to headwaters

Waterbody ID No.: IA 02-CED-0490

Subsegment No.: 1

Subsegment Description: mouth to W,SC10,T98,R16W, Mitchell Co.

Subsegment Length: 6.8 miles

ASSESSMENT COMMENTS: Assessment is based on results of the November 1994 DNR stream use assessment. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of two DNR stream use assessments conducted in Section 12, T98N, R16W in 1992 and 1994 to assess support of the B(LR) aquatic life uses as PS due to (1) habitat scores (both 20) worse than the overall average score (22) for DNR stream use assessments, (2) field notes that indicate frequent channel alterations and unstable streambanks due to excessive pasturing of cattle, and (3) field notes indicating substrates dominated by fines ("lot of muck/mud catching in net").

For the 1998 report, continue to assess support of the Class B(LR) aquatic life uses as PS. Follow-up monitoring is needed to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired. A review of the field sheets from the June 1992 and November 1994 stream use assessments shows relatively poor to a moderately diverse fish community (species/families, 1992->1994: 6/1; 10/3) for streams in the Iowan Surface subcoregion (47c), (2) presence of a slight majority of the expected fish taxa (6 of 11 and 7 of 11) for streams in this subregion, with none of the catfishes or sunfishes represented.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1996 and 1998 reports (see above). The results of the November 1994 DNR stream use assessment in Mitchell County-upon which the previous assessment of the Class B(LR) uses was, in part, based-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

BURR OAK CR

-- mouth (Mitchell Co.) to headwaters

Waterbody ID No.: IA 02-CED-0490

Subsegment No.: 2

Subsegment Description: CoRd T-46 to north line, SC5,T98,R16W, Mitchell Co.

Subsegment Length: 6.8 miles

ASSESSMENT COMMENTS: 1995 biocriteria: habsr/fshscr = 25/12 (shock)SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Used data from one biocriteria site in Mitchell County to make use support determination. Fish and habitat metrics from the stream use assessment protocol were applied to the data. Stream had fairly good habitat quality and supported a healthy fish community including large!! adult brown trout. Not assessed for the 1994 report.

For the 1998 report, used a review of results from the August 1995 biocriteria sampling to upgrade the assessment of support of the Class B(CW) aquatic life uses from FST to FS due to presence of the expected coldwater species (brown trout), with large adults present. In addition, this stream reach supports a relatively diverse fish community (19 species from 5 families) and the riparian corridor is in good condition.

For the 2000 report: SUMMARY: The Class B(CW) coldwater aquatic life uses were assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The previous assessment of support of the Class B(CW) uses was based on results of a DNR biocriteria sampling 1995 (see assessment for the 1998 report above). Based, however, on a summary of trout reproduction in Iowa streams prepared by the DNR Fisheries Bureau, these Class B(CW) uses were assessed as "fully supported / threatened." According to Moeller (1999), this reach of Burr Oak Creek is in the category of Iowa trout streams that have at least some documented natural reproduction but that are generally unable to maintain a viable trout population at this time. Thus, the assessment of support of the Class B(CW) aquatic life uses was changed from "fully supporting" to "fully supporting / threatened." Fish consumption uses remain "not assessed" due to lack of recent fish tissue monitoring in this stream reach.

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin**ROCK CR**

-- mouth to headwaters

Waterbody ID No.: IA 02-CED-0510

Subsegment No.: 1

Subsegment Description: mo to Goose Cr S35,T98N,R18W Mitchell Co

Subsegment Length: 16 miles

ASSESSMENT COMMENTS: Assessment is based on results on 1996 biocriteria sampling: 16 spp.; 5 fams; Fish IBI=54 (good); BM IBI=55 (fair).SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the July 1992 DNR stream use assessment to assess support of the Class B(WW) aquatic life uses as FST due to (1) habitat score (24) better than the overall median score (22) for DNR stream use assessments, (2) fish score (12) equal to the 75th percentile score for stream assessments made with electrofishers, (3) indications on field sheet of diverse substrates, only isolated channel alterations, and relatively stable banks. Lower reach of Rock Creek also sampled in August 1982 as part of ISU fish survey (JRO-78-1982); at last bridge before confl w/ Cedar R. Twenty fish species from 4 families captured, including state-threatened black redhorse and several rare/pollution intolerant species (e.g., Ozark minnow, rosyface shiner, and rainbow darter). Sample site had excellent aquatic habitat: high quality riffles of broken limestone and relatively deep pools. Continued support of the aquatic life uses is threatened by pasturing of riparian zone.

For the 1998 report, used results of the August 1996 DNR biocriteria sampling 0.25 mi E of Rock Creek to assess support of the Class B(WW) uses as FST. Biocriteria sampling showed (1) a moderately diverse fish community of 16 species from 5 families & (2) presence of nearly all (10 of 11) of the expected fish taxa for streams in the lowan surface subecoregion. Sampling did not, however, produce the expected game fish species although this may have been due to either sampling at the upstream end of the Class B(WW) reach or sampling just downstream from the Class B(CW) (coldwater) reach. Thus, continue to assess support of the Class B(WW) aquatic life uses as FST. Additional monitoring is needed in the Class B(WW) reach to confirm presence of the expected game fish species.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 54 (good) and the BM-IBI score was 55 (fair). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Cedar River Subbasin

DEER CR

-- mouth to IA/MN line

Waterbody ID No.: IA 02-CED-0540

Subsegment No.: 0

Subsegment Description: mouth to trib S28,T100N,R19W, Worth Co.

Subsegment Length: 12 miles

ASSESSMENT COMMENTS: 1992 SUA: habscr/fshscr=23/10 (shock); 1995 Biocriteria: Fish IBI= 72(good), BM-IBI= 67(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates below avg. habitat quality. Monotypic (sand) substr. and few pool/riffle sequences observed. Stream was levied and ditched in reach where assessed. Moderate diversity of fish species, mostly cyprinid species, observed. Carpsuckers, redhorse, catfish, and sunfish species notably were absent. Sampling effectiveness may have been a factor, but not mentioned in notes.

For the 1996 report: Used data from one biocriteria sampling site in Mitchell County. Fish and habitat data metrics from stream use assessmt. protocol were applied to the data to make use support determin. Reach that was sampled was in meandering segment of stream. Habitat quality was good, although channel is wide probably due to high flow impacts from channeliz. upstr. Very good fish community.

For the 1998 report, used a review of the field sheet from the July 1992 DNR stream use assessment and the August 1995 DNR biocriteria sampling in Mitchell County to upgrade the assessment of support of the Class B(LR) uses to FS due to (1) presence of a moderately diverse to very diverse fish community (species/families, SUA->biocriteria: 10/3; 27/5) for streams in the Iowan Surface subcoregion, (2) presence of a majority (7 of 11, SUA) to nearly all (10 of 11, biocriteria) of the expected fish taxa for streams in this subregion, (3) indications on the SUA field sheet of average to above average habitat quality, and (4) presence of several environmentally sensitive species (e.g., largescale stoneroller, Ozark minnow, rosyface shiner, northern hogsucker, smallmouth bass, and rainbow darter).

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 72 (good) and the BM-IBI score was 67 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Mississippi River and Direct Tributaries

UNNAMED CR

-- mouth to headwaters

Waterbody ID No.: IA 02-ICD-00345

Subsegment No.: 0

Subsegment Description: mouth to trib S29,T72N,R1W Des Moines Co

Subsegment Length: 1.5 miles

ASSESSMENT COMMENTS: Assessment is based on results of a DNR stream use assessment in September 1994. Stream aka "Ray Lake Drain." See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1994 stream use assessment to assess support of the B(LR) aquatic life uses as PS due to (1) habitat score (21) slightly worse than the overall average score (22) for DNR stream use assessments, (2) indication of extensive channelization, (3) low species richness (2 species) indicated from fish sampling, and (4) notes on field sheet ("not a lot of habitat to sample [for fish]; very mucky in center").

For the 1998 report, continued to assess support of the Class B(LR) aquatic life uses as PS. A review of the field sheet from the September 1994 DNR stream use assessment shows that only two species were captured in 700 of seining (green sunfish and "minnow?"). Follow-up monitoring is needed to determine the status of the aquatic communities and habitats and to determine the degree to which the Class B(LR) aquatic life uses may be impaired.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1998 report (see above). The results of the September 1994 DNR stream use assessment in Des Moines County-upon which the previous assessment of the Class B(LR) uses was based ("partially supported")-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

Rivers and Streams: Iowa-Cedar River Basin

MISSISSIPPI R

-- Skunk R to Iowa R

Waterbody ID No.: IA 02-ICM-0010

Subsegment No.: 1

Subsegment Description: Skunk R to Burlington water supply intake

Subsegment Length: 38 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring downstream from Burlington in 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Not assessed

Fish Consumption -- Fully Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 report.

For the 1998 report, assessed support of the fish consumption uses as FS due to results of the 1997 DNR/U.S. EPA "RAFT" fish contaminant monitoring program that show levels of all contaminants to be less than 1/2 of FDA action levels in composite samples of fillets from carp and white crappie. No other information available for assessing support of either the Class A (primary contact recreation) or Class B(WW) (aquatic life) uses.

For the 2000 report: SUMMARY: Support of the Class A (primary contact recreation) uses and the Class B(WW) aquatic life uses remain "not assessed." The fish consumption uses remain assessed as "fully supported." EXPLANATION: Due to a lack of monitoring data in this river reach, assessments were not developed for support of the Class A and Class B(WW) uses. Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1997 near Burlington (see assessment for the 1998 report above).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

IOWA R

--- mouth to Cedar River

Waterbody ID No.: IA 02-IOW-0010

Subsegment No.: 1

Subsegment Description: mouth to S. corp. limit of Wapello

Subsegment Length: 29 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) USGS/NAWQA monitoring at Wapello from March 1996 to August 1998 and (2) fish tissue (RAFT) monitoring in 1995, 1997, and 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, the two data values for FCB were collected at high flows, yet values were rel. low (240 and 450); thus assessed as FST. All fish contams were < 1/2 FDA action levels.

For 1994 report, with only data from 1992 available from USGS, have 2 of 4 samples collected at average flows that have levels of fecals that exceed the Class A WQC; thus, due to lack of complete data, use BPJ to assess as PS. No problems with ammonia or DO; thus, assess support of Class B uses as FST (due to known threats from ag. NPS. All fish contams in 1991 RAFT sample were < 1/2 FDA action levels; thus, fish consumption uses assessed as FS.

For 1996 report, relied primarily on USGS WQ monitoring data from Wapello for years 1993 through 1995 (from annual reports on Water Resources Data-Iowa) to assess the B(WW) aquatic life uses as FST due to no violations of WQC during period. Degree to which Class A uses supported difficult to determine since most flows were > mean monthly flow + 1 SD (i.e., flows materially affected by surface runoff). In general, however, the summer season data for fecal coliform bacteria at this station are relatively low regardless of flow: only 2 of seven values exceeded the Class A WQC, and the two non-flow affected values (68 and 100 per 100 ml) were below the WQC. Thus, use BPJ to assess Class A uses as FST. Results from fish tissue monitoring for the 1995 RAFT program show that all contaminants in the whole-fish sample of carp were less than 1/2 the FDA action levels; thus, assess support of fish consumption uses as FS. Support of all uses threatened by agricultural nonpoint sources.

For the 1998 report, used results from the 1995 RAFT (fish tissue) sampling to continue to assess fish consumption uses as FS.* The USGS NASQAN station at Wapello was discontinued after September 1995; continue to use these data for assessing support of the Class B(WW) aquatic life and Class A primary contact uses. Assess overall support as FST due to known threats from nonpoint source pollution. Results of USGS fish tissue monitoring for the National Water Quality Assessment (NAWQA) program in September 1995 near Wapello show that levels of organochlorine contaminants (chlordane, dieldrin, DDT, and PCBs) in a composite sample of whole-fish carp were less than 1/2 the respective FDA action levels. These results are consistent with results of the 1995 RAFT sampling and support the assessment of FS for fish consumption uses. For more info on the USGS fish tissue study, see USGS Fact Sheet FS-027-97. *Results from the 1997 RAFT fish contaminant monitoring program were received in August 1998. These results show that the level of technical chlordane (0.21 ppm) in the composite sample of whole-fish carp collected near Wapello exceeded 1/2 of the FDA action level for chlordane (0.30 ppm). Fish consumpt. uses FST.

For the 2000 report: SUMMARY: Both the Class A (primary contact recreation) uses and Class B(WW) aquatic life uses are assessed as "partially supported." Fish consumption uses are assessed as "fully supported." EXPLANATION: Results of monitoring conducted on the Iowa River at Wapello from March 1996 to August 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05465500) showed that levels of indicator bacteria suggest less than full support of the Class A (primary contact recreation) uses. In summer 1996, the geometric mean of fecal coliform bacteria in the 10 non-runoff-affected samples (130 orgs/100 ml) was less than the state criterion of 200 orgs/100 ml. Levels of bacteria in 3 of 10 samples (30%), however, exceeded the EPA-recommended single-sample maximum value of 400 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting (pgs 3-33 to 3-35 of U.S. EPA 1997b), "partial support" of primary contact uses is indicated if geometric mean for fecal coliforms is less than 200 organisms/100 ml but more than 10% of samples exceed the single sample maximum value of 400 orgs/100 ml. In summer 1997 USGS switched to E. coli as the bacteria indicator. The geometric mean of E. coli in the 12 samples (245 orgs/100 ml) was greater than the EPA-recommended criterion of 126 orgs/100ml, and 5 samples (42%) exceeded the EPA-recommended single sample maximum value (289 orgs/100 ml) for E. coli. According to the U.S. EPA guidelines, these results suggest "nonsupport" of the Class A uses. Because the Iowa water quality standards specify fecal coliforms as the bacterial indicator, the Class A uses for this river reach were assessed as "partially supported." Regarding support of the Class B(WW) uses, results of the USGS/NAWQA monitoring showed (1) no violations of Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen in the 53 samples collected, (2) a single violations of the Class B(WW) chronic water quality criteria for chlorpyrifos and DDE in the 52 samples analyzed, and (3) two violations of the Class B(WW) chronic water quality criterion for dieldrin in 52 samples analyzed. Although the results for pH, dissolved oxygen, and ammonia-nitrogen suggest full support of the aquatic life uses, the results of pesticide monitoring (dieldrin) indicate only partial support of these uses. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), the single violations of the chronic criteria for chlorpyrifos and DDE do not suggest an impairment of the aquatic life uses. The EPA guidelines, however, specify that more than one violation of a water quality criterion for a toxic contaminant within a three-year period indicates that the aquatic life uses are not fully supported. Thus, the two violations of the chronic criterion for dieldrin (4% violation) indicate "partial support" of the Class B(WW) uses. Fish consumption uses are assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring near Wapello in 1999 that showed levels of contaminants in the composite sample of whole-fish carp were below 1/2 of the respective FDA action levels and DNR levels of concern. The level of technical chlordane in the 1999 sample (0.11 mg/kg) is approximately half the level reported for the similar sampling in 1997 (0.21 mg/kg) and is less than 1/2 the FDA action level of 0.30 mg/kg.

Iowa River Subbasin

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

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IOWA R

-- mouth to Cedar River

Waterbody ID No.: IA 02-IOW-0010

Subsegment No.: 2

Subsegment Description: S. corp. limit of Wapello to Long Cr.

Subsegment Length: 29 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) USGS/NAWQA monitoring at Wapello from March 1996 to August 1998 and (2) fish tissue (RAFT) monitoring in 1995, 1997, and 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

[The same assessment is used for Iowa River waterbodies IA 02-IOW-0010-1 and IA 02-IOW-0010-2.]

For 1992 report, the two data values for FCB were collected at high flows, yet values were rel. low (240 and 450); thus assessed as FST. All fish contams were < 1/2 FDA action levels.

For 1994 report, with only data from 1992 available from USGS, have 2 of 4 samples collected at average flows that have levels of fecals that exceed the Class A WQC; thus, due to lack of complete data, use BPJ to assess as PS. No problems with ammonia or DO; thus, assess support of Class B uses as FST (due to known threats from ag. NPS. All fish contams in 1991 RAFT sample were < 1/2 FDA action levels; thus, fish consumption uses assessed as FS.

For 1996 report, relied primarily on USGS WQ monitoring data from Wapello for years 1993 through 1995 (from annual reports on Water Resources Data-Iowa) to assess the B(WW) aquatic life uses as FST due to no violations of WQC during period. Degree to which Class A uses supported difficult to determine since most flows were > mean monthly flow + 1 SD (i.e., flows materially affected by surface runoff). In general, however, the summer season data for fecal coliform bacteria at this station are relatively low regardless of flow: only 2 of seven values exceeded the Class A WQC, and the two non-flow affected values (68 and 100 per 100 ml) were below the WQC. Thus, use BPJ to assess Class A uses as FST. Results from fish tissue monitoring for the 1995 RAFT program show that all contaminants in the whole-fish sample of carp were less than 1/2 the FDA action levels; thus, assess support of fish consumption uses as FS. Support of all uses threatened by agricultural nonpoint sources.

For the 1998 report, used results from the 1995 RAFT (fish tissue) sampling to continue to assess fish consumption uses as FS.* The USGS NASQAN station at Wapello was discontinued after September 1995; continue to use these data for assessing support of the Class B(WW) aquatic life and Class A primary contact uses. Assess overall support as FST due to known threats from nonpoint source pollution. Results of USGS fish tissue monitoring for the National Water Quality Assessment (NAWQA) program in September 1995 near Wapello show that levels of organochlorine contaminants (chlordane, dieldrin, DDT, and PCBs) in a composite sample of whole-fish carp were less than 1/2 the respective FDA action levels. These results are consistent with results of the 1995 RAFT sampling and support the assessment of FS for fish consumption uses. For more info on the USGS fish tissue study, see USGS Fact Sheet FS-027-97. *Results from the 1997 RAFT fish contaminant monitoring program were received in August 1998. These results show that the level of technical chlordane (0.21 ppm) in the composite sample of whole-fish carp collected near Wapello exceeded 1/2 of the FDA action level for chlordane (0.30 ppm). Fish consumption uses FST.

For the 2000 report: SUMMARY: Both the Class A (primary contact recreation) uses and Class B(WW) aquatic life uses are assessed as "partially supported." Fish consumption uses are assessed as "fully supported." EXPLANATION: Results of monitoring conducted on the Iowa River at Wapello from March 1996 to August 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05465500) showed that levels of indicator bacteria suggest less than full support of the Class A (primary contact recreation) uses. In summer 1996, the geometric mean of fecal coliform bacteria in the 10 non-runoff-affected samples (130 orgs/100 ml) was less than the state criterion of 200 orgs/100 ml. Levels of bacteria in 3 of 10 samples (30%), however, exceeded the EPA-recommended single-sample maximum value of 400 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting (pgs 3-33 to 3-35 of U.S. EPA 1997b), "partial support" of primary contact uses is indicated if geometric mean for fecal coliforms is less than 200 organisms/100 ml but more than 10% of samples exceed the single sample maximum value of 400 orgs/100 ml. In summer 1997 USGS switched to E. coli as the bacteria indicator. The geometric mean of E. coli in the 12 samples (245 orgs/100 ml) was greater than the EPA-recommended criterion of 126 orgs/100ml, and 5 samples (42%) exceeded the EPA-recommended single sample maximum value (289 orgs/100 ml) for E. coli. According to the U.S. EPA guidelines, these results suggest "nonsupport" of the Class A uses. Because the Iowa water quality standards specify fecal coliforms as the bacterial indicator, the Class A uses for this river reach were assessed as "partially supported." Regarding support of the Class B(WW) uses, results of the USGS/NAWQA monitoring showed (1) no violations of Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen in the 53 samples collected, (2) a single violations of the Class B(WW) chronic water quality criteria for chlorpyrifos and DDE in the 52 samples analyzed, and (3) two violations of the Class B(WW) chronic water quality criterion for dieldrin in 52 samples analyzed. Although the results for pH, dissolved oxygen, and ammonia-nitrogen suggest full support of the aquatic life uses, the results of pesticide monitoring (dieldrin) indicate only partial support of these uses. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), the single violations of the chronic criteria for chlorpyrifos and DDE do not suggest an impairment of the aquatic life uses. The EPA guidelines, however, specify that more than one violation of a water quality criterion for a toxic contaminant within a three-year period indicates that the aquatic life uses are not fully supported. Thus, the two violations of the chronic

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

criterion for dieldrin (4% violation) indicate "partial support" of the Class B(WW) uses. Fish consumption uses are assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring near Wapello in 1999 that showed levels of contaminants in the composite sample of whole-fish carp were below 1/4 of the respective FDA action levels and DNR levels of concern. The level of technical chlordane in the 1999 sample (0.11 mg/kg) is approximately half the level reported for the similar sampling in 1997 (0.21 mg/kg) and is less than 1/4 the FDA action level of 0.30 mg/kg.

IOWA R

-- mouth to Cedar River

Waterbody ID No.: IA 02-IOW-0010

Subsegment No.: 3

Subsegment Description: Long Cr. to Cedar R.

Subsegment Length: 29 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR monthly water quality monitoring at Columbus Junction. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Fully
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report, had 1 of 11 samples collected at approx average flows that had levels of FCB that exceeded the Class A WQC (=11% violation = PS). The chronic WQC for ammonia was exceeded in 18 of 36 samples, but the acute criterion was not exceeded.

For the 1994 report, 6 of 12 FCB samples were collected at approx average flows; of these 6, 2 had levels of FCB that exceeded the Class A WQC; due to lack of complete data, used BPJ to assess Class A use as PS. No violations of chronic NH3 criteria or any other Class B toxics; no violations of DO criteria; thus, assess support of Class B uses as FST due to known threat from Ag NPS.

For the 1996 report, 5 of 10 non flow-affected samples had levels of fecal coliforms > water quality criterion; geometric mean of these values = 238; thus, assess support of Class A uses as NS. No other violations during the reporting period in the 24 samples from the monthly monitoring station at Columbus Junction.

For the 1998 report, used results from the DNR monthly WQ monitoring station at the Hwy 92 bridge at Columbus Junction to develop assessments of use support. The Class B(WW) aquatic life uses were assessed as FS due to lack of violations for either conventional or toxic pollutants in the 24 samples collected from October 1995 to September 1997. The Class A primary contact uses were assessed as PS: the geometric mean of the 11 non-flow affected samples collected during summers of 1996 and 1997 was 104 orgs/100 ml (<200 orgs/100 ml WQS = FS), but 18% of the samples had levels of fecal coliforms > 400 orgs/ 100 ml (=PS, see p. 3-34 of the Supplement to the U.S. EPA Guidelines for preparation of the 1998 Section 305(b) reports). Assess overall support as FST due to known threats from nonpoint source pollutants.

For the 2000 report: SUMMARY: Class A (primary contact recreation) uses are assessed as "not supported;" Class B(WW) aquatic life uses are assessed as "fully supported;" fish consumption uses remain "not assessed." EXPLANATION: Results of water quality monitoring during the 1998-1999 biennial period at the DNR monthly station on the Iowa River at Columbus Junction show that the Class A uses are "not supported." The geometric mean levels of fecal coliform bacteria in the 14 non-runoff-affected samples collected during summers of 1998 and 1999 (211 orgs/100 ml) exceeded (slightly) the Iowa water quality criterion of 200 orgs/100 ml. Four of the 14 samples (29%) had levels of fecal coliforms greater than the EPA-recommended single sample maximum value of 400 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting (pgs 3-33 to 3-35 of U.S. EPA 1997b), primary contact uses are "not supported" if the geometric mean for fecal coliforms is greater than 200 organisms/100 ml. Despite the indications of impairment for Class A uses, levels of indicator bacteria at the Columbus Junction monitoring station have been relatively low during recent biennial periods. Typically, the assessments of impairment have been decided by only one or two samples. The only violation of Class B(WW) criteria for conventional parameters was in one of the 24 samples analyzed for pH during the biennial period. The sample collected on December 1, 1997, had a pH level of 9.1 units; this level violated the Class B(WW) (and Class A) criterion of 9.0 units. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), the percentage of violations for pH at this station (4%) does not suggest a water quality impairment (the EPA guidelines allow up to 10% violations of these conventional parameters before impairment of water quality is indicated). Levels of dissolved oxygen and ammonia-nitrogen did not violate the respective Class B(WW) criteria in the 24 samples analyzed during the biennial period, and no violations of Class B(WW) chronic criteria for toxic metals occurred in the two samples analyzed during this period. Thus, the Class B(WW) aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed" due to lack of fish tissue monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

IOWA R

-- English R. to Coralville Dam

Waterbody ID No.: IA 02-IOW-0030

Subsegment No.: 1

Subsegment Description: English R to Burlington Dam in Iowa City

Subsegment Length: 28 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring in 1995, 1997, and 1999 in reach downstream from Burlington St. dam @ Iowa City to Hills. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Threatened	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: The sample of channel catfish filets collected dstr from the Burlington St. dam in 1992 contained 0.41 ppm of tech. chlordane; this is greater than the FDA action level of 0.3 ppm. A follow-up study planned for 1993 could not be conducted due to high flows in the Iowa River. Until the follow-up study is conducted, will assess the fish consumption as FST.

For 1996 report, used results of special study of chlordane in fish and of 1994 RAFT sampling at Iowa City and Hills to assess support of fish consumption uses as FST due to (1) levels of chlordane in carp filets at all 4 DNR sites > 1/2 FDA AL; (2) level of chlordane in 1 of 2 94 samples from Hills > FDA act. level, (3) level of chlordane in 94 RAFT sample of CCAT filets from Iowa City > 1/2 FDA action level, (4) levels of chlordane < 1/2 FDA AL in 95 RAFT carp fillet sample from Iowa City; > 1/2 FDA AL-at Hills in carp fillet sample (0.21 ppm). Thus, appears that levels of chlordane in carp/channel catfish may have leveled and continue to decline. RAFT sampling will continue at Iowa City and Hills.

For the 1998 report, used results of RAFT fish tissue monitoring conducted in 1994 and 1995 that showed levels of chlordane in bottom feeder filets less than the FDA action level but greater than 1/2 this action level (=FST). RAFT monitoring conducted in 1997 at Iowa City & Hills continued to show similar results: the level of technical chlordane in compsite samples of filets of channel catfish and carp were less than the FDA action level of 0.300 ppm, but the level of chlordane in the sample of channel catfish filets from Iowa City was greater than 1/2 of this action level (0.17 ppm). Thus, continue to assess support of the fish consumption uses as FST. RAFT monitoring will continue on an every-other-year basis to track levels of chlordane. Similar to previous years, assessments of support of the Class A (primary contact recreation) and Class B(WW) (aquatic life) uses were not developed for this waterbody segment, despite a long-term monitoring station just upstream from the Burlington Street dam, due to presence of potential significant influences on water quality (e.g., Iowa City wastewater treatment plants) in this segment.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses and the Class B(WW) aquatic life uses remain "not assessed." The fish consumption uses remain assessed as "fully supported / threatened." EXPLANATION: Similar to the 1998 assessment (see above), assessments of support of the Class A and Class B(WW) uses were not developed due to the potential influences of Iowa City's wastewater treatment plants on results of water quality monitoring from the long-term station monitored by the University of Iowa (under contract with the Army Corps of Engineers) just upriver from the Burlington Street Dam in Iowa City. That is, water quality conditions in the vicinity of, and downriver from, the wastewater treatment plants are likely not well-represented by a monitoring station located upriver from these plants. Fish consumption uses remain assessed as "fully supported / threatened" due to results from EPA/DNR fish tissue (RAFT) monitoring in 1999 showing that levels of technical chlordane remain slightly above 1/2 of the FDA action level. The composite sample of channel catfish filets collected from the Iowa River at Iowa City for the 1999 RAFT program contained 0.16 mg/kg of technical chlordane, thus slightly exceeding 1/2 of the respective FDA action level (0.30 mg/kg).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

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Iowa River Subbasin

IOWA R

-- English R. to Coralville Dam

Waterbody ID No.: IA 02-IOW-0030

Subsegment No.: 2

Subsegment Description: Burlington St. Dam to Coralville Dam

Subsegment Length: 28 miles

ASSESSMENT COMMENTS: Assessment is based on results of routine water quality monitoring at Iowa City conducted as part of the UI/ACOE Coralville Water Quality Study. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully
Drinking Water Supply	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, reach was assessed as NS due to high levels of fecals: 7 of 13 sampled collected during non-runoff periods violated the Class A WQC. Sampling showed no violations of Class B WQC or high levels of fish contaminants.

For 1994 report, of the 18 samples collected in 1992 and 1993, only 5 were collected during approx average flows; of these, only 1 sample had fecals exceeding the Class A WQC; thus assess Class A use with BPJ as FS. Of the 72 samples analyzed for NO₃, only 4 contained more than 10 mg/l; DW advisory, however, issued in Dec 91 for NO₃; assess Class C use as PS. None of the approx 40 samples contained levels of Class B toxics that exceeded WQC; thus, assess Class B uses as FS. Overall assess set at FST due to known threat from ag. NPS. (High level of chlordane in 1992 RAFT sample not extended upstr of Burlington St.

For 1996 report, relatively low levels of fecal coliforms; only 2 violations of Class A WQC in 16 non-flow-affected samples with geometric mean = 57; thus, assess Class A uses as FST. No violations of Class B toxics during 3-year period; only 1 of 45 samples violated Class B(WW) WQC for dissolved oxygen; thus, assess Class B uses as FST due to known threats from ag and urban NPSs. Based on results of 1994 DNR study of fish tissue contamination, assess fish consumption uses as FS. No violations of Class C WQC, including NO₃, in 65 samples collected during three-year period; thus, assess Class C uses as FST due to continuing threat of agricultural and urban NPS runoff.

For the 1998 report, had no violations of either conventional or toxic Class B(WW) water quality criteria in the 45 samples collected between October 1995 and September 1995; thus, assess support of the Class B(WW) aquatic life uses as FST. Continue to assess support of the fish consumption uses as FS due to ongoing ACOE fish contaminant monitoring that shows levels of chlordane, dieldrin, heptachlor epoxide, and DDE well below 1/2 of FDA action levels in samples of whole-fish carp collected from downstream of Coralville Reservoir in June 1996. No violations of WQ criteria for Class C (drinking water) uses, including no violations of the nitrate criterion in the 44 samples analyzed between October 1995 and October 1997; thus, assess support of Class C uses as FS. Assessed support of the Class A (primary contact recreation) uses as FS due to (1) geometric mean of fecal coliform bacteria in the 14 non-flow affected samples of 68 organisms/100 ml (i.e., less than the 200 orgs/100 ml WQ criterion) and (2) no samples exceeding 400 orgs/100 ml.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses, the Class B(WW) aquatic life uses, and the Class C (drinking water) uses are assessed as "fully supported." Fish consumption uses remain assessed as "fully supported." EXPLANATION: The assessments of support of the beneficial uses are based on results of water quality monitoring conducted by the University of Iowa (under contract with the U.S. Army Corps of Engineers) as part of the Coralville Reservoir Water Quality Study (see Johnson and McDonald 1999, 2000). Results of water quality at the long-term station near the University of Iowa water treatment plant suggest that the Class A uses should be assessed as "fully supporting / threatened." Of the 19 samples analyzed for indicator bacteria (fecal coliforms) during summers of 1998 and 1999, 13 were collected during conditions of high river flow. These high flows resulted in monitoring at river discharges that exceeded the long-term monthly average flow plus one standard deviation of this average (flow statistics from Fischer et al. 1990). For purposes of Section 305(b) assessments, DNR uses the long-term average monthly flow plus one standard deviation of this average to identify river flows that are materially affected by surface runoff. According to the Iowa Water Quality Standards (IAC 1990:8), the water quality criterion for fecal coliform bacteria (200 orgs/100 ml) does not apply "when the waters are materially affected by surface runoff." The geometric mean of fecal coliform bacteria in the six non-runoff-affected samples was 77 orgs/100 ml; one of the six samples (17%) exceeded the EPA-recommended single-sample maximum value of 400 orgs/100 ml. The geometric mean (77 orgs/100 ml) is well below the state water quality criterion of 200 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting, if more than 10% of samples exceed the single-sample maximum value of 400 orgs/100 ml, the primary contact recreation uses are only "partially supported" (see pgs 3-33 to 3-35 of U.S. EPA 1997b). Due, however, to (1) the lack of sufficient data points for developing a "monitored" assessment (according to DNR's 305(b) assessment methodology, at least 10 non-runoff-affected samples), and (2) the relatively low geometric mean, the Class A uses of this river reach were assessed as "fully supported." Class B(WW) aquatic life uses were also assessed as "fully supported / threatened." Results of monitoring at the Iowa/ACOE station showed no violations of Class B(WW) criteria for pH or dissolved oxygen in the 44 samples collected during the 1998-1999 biennial period. One of 43 samples exceeded the Class B(WW) chronic water quality criterion for ammonia-nitrogen; this sample was collected on February 12, 1998, and contained 5.6 mg/l of ammonia-nitrogen (chronic criterion = 1.25 mg/l) (a similar level (5.1 mg/l) was reported for this date at the South Amana station (330615) in this monitoring network). This level of ammonia-nitrogen far exceeds levels typical for this station and other river monitoring stations in the state.

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), one violation of water quality criterion for a toxic contaminant does not suggest an impairment of the aquatic life uses. According to DNR's methodology for Section 305(b) reporting, the occurrence of this violation indicates that the Class B(WW) uses should be assessed as "fully supporting / threatened." The Class C drinking water uses are assessed "fully supported / threatened" due to violations of the Class C criterion (MCL) for nitrate+nitrite. Four of 49 samples (8%) exceeded the 10 mg/l MCL; three of these violations occurred in March and April of 1998; the maximum violation was 11.7 mg/l. The average nitrate level was 5.8 mg/l (standard deviation = 3.0 mg/l). Based on DNR's Section 305(b) assessment methodology, if less than 15% of samples collected monthly or more frequently exceed the MCL for nitrate, drinking water uses should be assessed as "fully supporting / threatened." Fish consumption uses remain assessed as "fully supporting." Fish contaminant monitoring conducted down river from Coralville Reservoir in 1997 and 1998 as part of the Coralville Reservoir Water Quality Study showed that levels of organochlorine contaminants (chlordane, dieldrin, and heptachlor epoxide) in composite samples of whole-fish carp were well below 1/2 of the respective FDA action levels (see Johnson and McDonald (1999, 2000) for more information).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

IOWA R

-- Coralville Res (218) to Salt C

Waterbody ID No.: IA 02-IOW-0050

Subsegment No.: 1

Subsegment Description: Coralville Res (Hwy 218) to Hwy 149

Subsegment Length: 59 miles

ASSESSMENT COMMENTS: Assessment is based on results of water quality monitoring near Amana conducted as part of the UI/ACOE Coralville Reservoir Water Quality Study. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, assessed as NS due to 9 of 17 samples collected during non-runoff conditions that exceeded the Class A WQC (52% of samples in violation); cause and source (industry) same as used in 1990 305(b).

For 1994 report, had 1 of 39 samples in violation of Class B(WW) DO criterion (= 2.5% = FS); also had 3 of the 5 samples collected during non-runoff conditions the exceeded the Class A WQC. Because fecal data were too few to meet completeness criteria, used BPJ to assess as PS. No violations of ammonia or other Class B toxics.

For 1996 report, 9 of 18 non flow-affected samples had levels of fecal coliforms > Class A WQC; geometric mean of these 18 samples = 224; thus, continue to assess Class A uses as PS. No violations of Class B WQC in 45 samples over the two-year period; thus, assess Class B uses as FST due to pollution threat from urban, industrial/municipal, and agricultural sources.

For the 1998 report, had 1 of 44 samples collected during the October 1995-September 1997 period that exceeded the Class B(WW) WQ criterion for dissolved oxygen (=2% violation). Based on assessment methods in the EPA's 1998 Section 305(b) Guidelines, less than 10% violation indicates full support of designated uses. Support of Class A primary contact uses was assessed as FS due to (1) geometric mean of fecal coliforms (58 orgs/100 ml) less than the WQ criterion of 200 orgs/100 ml and (2) the percent of samples greater than 400 orgs/100 ml (7%) is less than 10% (see p. 3-34 of the Supplement to EPA's Guidelines for preparation of the 1998 Section 305(b) report). Assessed support of fish consumption uses as FS due to results of ACOE sampling upriver from Coralville Reservoir that showed levels of chlordane, dieldrin, DDE, and heptachlor epoxide to be less than 1/2 of FDA action levels.

For the 2000 report: SUMMARY: Class A uses are assessed as "fully supported;" the Class B(WW) aquatic life uses are assessed as fully supported / threatened. Fish consumption uses remain assessed as "fully supported." EXPLANATION: The assessments of support of the beneficial uses are based on results of water quality monitoring conducted by the University of Iowa (under contract with the U.S. Army Corps of Engineers) as part of the Coralville Reservoir Water Quality Study (see Johnson and McDonald 1999, 2000). Results of water quality monitoring at the long-term station near South Amana suggest that the Class A uses should be assessed as "fully supporting." The geometric mean of indicator bacteria (fecal coliforms) in the 13 non-runoff-affected samples (116 orgs/100 ml) collected at this station during summers of 1998 and 1999 was below the Iowa Class A water quality criterion of 200 orgs/100 ml. In addition, only 1 of the 13 samples (8%) exceeded the EPA-recommended single sample maximum value for fecal coliforms of 400 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting, a geometric mean for fecal coliforms less than 200 orgs/100 ml, combined with less than 10% of samples exceeding the 400 orgs/100 ml single sample maximum value, suggest full support of primary contact recreation uses. (see pgs 3-33 to 3-35 of U.S. EPA 1997b). This is the second consecutive biennial period in which monitoring data for this river reach suggest "full support" of the Class A uses; this pattern suggests a sustained improvement in water quality. Prior to the 1996-1997 biennial period, data for indicator bacteria typically indicated impairment of these uses. The Class B aquatic life uses are assessed as "fully supported/threatened" due to (1) lack of violations of pH in the 44 samples collected during the 1998-1999 biennial period, (2) occurrence of 2 violations of the Iowa water quality criterion for dissolved oxygen in Class B(WW) waters (5.0 mg/l), and (3) occurrence of one violation of the state chronic criterion for ammonia-nitrogen. Violations of the dissolved oxygen criterion occurred on June 30 (3.9 mg/l) and July 8, 1998 (3.0 mg/l). The violation of the ammonia-nitrogen criterion occurred on February 12, 1998. The level of ammonia-nitrogen (5.1 mg/l; chronic criterion = 1.25 mg/l) in this sample far exceeds typical levels for this monitoring station as well as other river monitoring stations in the state (a similar level (5.6 mg/l) was reported for this date at the Iowa City station (330100) in this monitoring network). According to U.S. EPA guidelines for determining the level of support for aquatic life uses (U.S. EPA 1997b: pgs 3-17 and 3-18) do not suggest any threats to full support due to the violations of state criteria for dissolved oxygen and ammonia-nitrogen at this monitoring station. The EPA guidelines allow for up to 10% of samples to exceed criteria for dissolved oxygen, and one sample can exceed state criteria for ammonia nitrogen. According to DNR's Section 305(b) assessment methodology, the ammonia-nitrogen violation indicates a threat to full support of the aquatic life uses. Fish consumption uses remain assessed as "fully supported" based on the assessment developed for the 1998 report (see above). Fish contaminant monitoring is no longer conducted upriver from Coralville Reservoir as part of the University of Iowa/Army Corps of Engineers water quality monitoring network (see Johnson and McDonald 1999, 2000).

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Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

IOWA R

-- Coralville Res (218) to Salt C

Waterbody ID No.: IA 02-IOW-0050

Subsegment No.: 2

Subsegment Description: Hwy 149 (Amana) to Salt Creek

Subsegment Length: 59 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring of water quality (1996-98) and fish tissue (1995) near Marengo for the USGS NAWQA program. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Fully
Fish Consumption	-- Threatened	Primary Contact (Recr)	-- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1994 or 1996 reports.

For the 1998 report, used results of fish tissue monitoring conducted for the USGS National Water Quality Assessment (NAWQA) program in September 1995. The whole-fish composite sample of carp collected near Margeno was analyzed for several organochlorine compounds, including chlordane, dieldrin, DDT, and PCBs. Levels of these DDT and PCBs in the whole-fish sample were less than one-half the respective FDA action levels. Levels of chlordane and dieldrin, however, approached or slightly exceeded the 1/2 of the FDA action level of 0.3 mg/kg for both compounds. Thus, assess fish consumption uses as fully supported/threatened (FST). For more information on the USGS fish tissue study, see USGS Fact Sheet FS-027-97 (March 1997). No information was available for developing assessments of support of the Class B(WW) aquatic life or Class A primary contact recreation uses for this river reach.

For the 2000 report: SUMMARY: Class A uses were assessed as "not supported;" the Class B(WW) uses were assessed as "fully supported." Fish consumption uses remain assessed as "fully supported / threatened." EXPLANATION: Assessments of support of beneficial uses are based on results of monitoring conducted on the Iowa River near Marengo from March 1996 to September 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05453100). Class A uses were assessed as "not supporting" due to results of the USGS/NAWQA monitoring that showed that levels of indicator bacteria suggest less than full support of the primary contact recreation uses. In summer 1996, the geometric mean of fecal coliform bacteria in the 8 non-runoff-affected samples (431 orgs/100 ml) far exceeded the state Class A criterion of 200 orgs/100 ml. Levels of bacteria in 4 of the 8 samples (50%) exceeded the EPA-recommended single-sample maximum value of 400 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting (pgs 3-33 to 3-35 of U.S. EPA 1997b), "nonsupport" of primary contact recreation uses is indicated if geometric mean for fecal coliforms is greater than 200 organisms/100 ml. Despite the lack of sufficient indicator bacteria data points for developing a "monitored" assessment (according to DNR's 305(b) assessment methodology, at least 10 non-runoff-affected samples), the Class A uses were assessed as "not supported." In addition, USGS switched to E. coli as the bacteria indicator in summer 1997. The geometric mean of E. coli in the 4 samples (332 orgs/100 ml) was much greater than the EPA-recommended criterion of 126 orgs/100ml, and 2 samples (50%) exceeded the EPA-recommended single sample maximum value (289 orgs/100 ml) for E. coli). According to the U.S. EPA guidelines, these results also suggest "nonsupport" of the Class A uses. Regarding support of the Class B(WW) aquatic life uses, results of USGS/NAWQA monitoring at Marengo showed that one of 34 samples (3%) violated the Class A and Class B(WW) criterion for pH (6.1 units on January 14, 1997) and that one of 34 samples (3%) violated the Class B(WW) criterion (5.0 mg/l) for dissolved oxygen (3.3 mg/l on July 7, 1998). According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), the percentage of violations for pH and dissolved oxygen criteria at this station (3%) does not suggest a water quality impairment (the EPA guidelines allow up to 10% violations of these conventional parameters before impairment of water quality is indicated). None of the 34 samples analyzed contained levels of ammonia-nitrogen above state chronic criteria for Class B(WW) waters, and none of 23 samples analyzed contained levels of toxic organic compounds or pesticides that exceeded the respective state water quality criteria. Fish consumption uses remain assessed as "fully supported / threatened" based on results of USGS/NAWQA fish tissue monitoring in 1995 that showed levels of chlordane and dieldrin in samples of whole-fish carp approached or slightly exceeded 1/2 of the respective FDA action levels (see assessment for the 1998 report above).

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

IOWA R

-- Salt Cr. to Minerva Cr.

Waterbody ID No.: IA 02-IOW-0060

Subsegment No.: 2

Subsegment Description: Asher Cr. (Marshalltown) to Minerva Cr.

Subsegment Length: 69 miles

ASSESSMENT COMMENTS:

Assessment is based on results of DNR quarterly water quality monitoring near the Marshalltown Water Works from October 1995 to September 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1994 or 1996 reports.

For the 1998 report, used results from the DNR quarterly WQ monitoring station on the Iowa R. near the Marshalltown Water Works for developing assessments of support of designated uses. Support of Class B(WW) aquatic life uses assessed as FST due to lack of violations for Class B(WW) WQ criteria for conventional and toxic parameters in the 8 samples collected over the 1996- 97 period. Assess support of the Class A primary contact uses as PS due to high levels of fecal coliform bacteria in the 5 non-flow affected samples collected during summers of 1996 and 1997: geometric mean of 184 orgs/100 ml < 200 orgs/100 ml WQS, but > 10% of samples (40%) exceeded 400 orgs/100 ml =PS (see page 3-34 of Supplement to the EPA Guidelines for preparation of the 1998 Section 305(b) reports). Addendum: In summer 1997, reports of a reddish/brown coloration in the Iowa River between Eldora and Tama was reported by the public. Investigations by DNR Field Offices 2 (Mason City) and 5 (Des Moines) indicated that the cause of the unusual coloration was a bloom of algae (diatoms, possibly Stephanodiscus or Cyclotella sp.). Water quality sampling showed to apparent negative impact to levels of DO or ammonia in the river; no fish kills or other water quality problems observed.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain assessed as "partially supported," and the Class B(WW) aquatic life uses remain assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: Due to the absence of recent water quality information, continued to use the assessments of support of the Class A and Class B(WW) uses developed for the 1998 report (see above). These assessments were based on results of water quality monitoring during the 1996-1997 biennial period from the DNR quarterly monitoring station at Marshalltown. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Marshalltown station began in October 1999. The fish consumption uses remained "not assessed" due to a lack of recent fish tissue monitoring in this river reach.

Iowa River Subbasin

IOWA R

-- Minerva Cr to trib SE Popejoy

Waterbody ID No.: IA 02-IOW-0070

Subsegment No.: 2

Subsegment Description: Hardin/Marshall line to E.lim Iowa Falls

Subsegment Length: 62 miles

ASSESSMENT COMMENTS: Assessments is based on results of water quality monitoring at the DNR quarterly station near Steamboat Rock from October 1995 through September 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Little data available for the middle reaches of the Iowa R. Fish collections were made at horseshoe bend area of Iowa R. approx 3 mi NW of Steamboat Rock and immediately downstream from dam at Steamboat Rock in April 1990 as part of the 1990 Natural History Foray sponsored by the DNR Parks/Preserves Division. Very diverse fish communities found at both locations: 17 species with 3 tolerant species 3 mi NW Steamboat Rock; 19 species with 4 tolerant species dstr dam at Steamboat Rock. Six families of fish represented; smallmouth bass collected at both locations. Based on this information, evaluate the Class B(WW) uses in this reach as FST, with threats due to agricultural NPSs. Reach was not assessed for 1994 report.

For the 1998 report, used results from DNR quarterly WQ monitoring station at Steamboat Rock to asses support of the Class B(WW) aquatic life uses as FST due to lack of violations of WQ criteria for either conventional or toxic pollutants in the 8 samples collected during the October 1995-September 1997 period. Continue to use results of the 1990 DNR fish survey, although this information is well over five years old; additional monitoring is needed. Support of the Class A primary contact uses assessed as FST due to relatively low levels of indicator bacteria in the 5 non-flow affected samples collected during summers of 1996 and 1997: 4 of the 5 samples were below the 200 org/100 ml WQ criterion; the only violation was a sample collected on July 14, 1997 (450 orgs/100 ml). Because data from less than 10 non-flow affected samples were available, use best professional judgement to assess support of Class A uses as FST. Addendum: In summer 1997, reports of a reddish/brown coloration in the Iowa River between Eldora and Tama was reported by the public. Investigations by DNR Field Offices 2 (Mason City) and 5 (Des Moines) indicated that the cause of the unusual coloration was a bloom of algae (diatoms, possibly Stephanodiscus or Cyclotella sp.) Water quality sampling showed no apparent negative impact to levels of DO or ammonia in the river. No fish kills or other WQ problems observed. The March/April 1998 edition of the Iowa Conservationist notes that the Iowa River in Hardin County has good to excellent populations of walleye, smallmouth bass, and channel catfish. Good populations of these game fish species--especially smallmouth bass and walleye-- stongly suggest good water quality and good aquatic habitat conditions.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses and the Class B(WW) aquatic life uses remain assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: Due to the absence of recent water quality information, continued to use the assessments of support of the beneficial uses developed for the 1998 report (see above). These assessments were based on results of water quality monitoring during the 1996-1997 biennial period from the DNR quarterly monitoring station at Steamboat Rock. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Steamboat Rock station began in October 1999. The fish consumption uses remained "not assessed" due to a lack of recent fish tissue monitoring in this river reach.

Iowa River Subbasin**IOWA R**

-- Trib SE Popejoy to E&W Br Iowa

Waterbody ID No.: IA 02-IOW-0080

Subsegment No.: 1

Subsegment Description: Trib SE Popejoy to Hwy 69 br., Wright Co

Subsegment Length: 39 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring of water quality (1996-1998) and fish tissue (1995) near Rowan as part of the USGS NAWQA program. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1994 or 1996 reports.

For the 1998 report, used results of fish tissue monitoring conducted for the USGS National Water Quality Assessment (NAWQA) program to develop an assessment of support of fish consumption uses. The composite sample of whole-fish carp collected from the Iowa River near Rowan in September 1995 was analyzed for several organochlorine compounds, including chlordane, dieldrin, DDT, and PCBs. Levels of all contaminants were below 1/2 of the respective FDA action levels, thus suggesting full support of fish consumption uses. For more information on the USGS fish tissue study, see USGS Fact Sheet FS-027-97 (March 1997).

For the 2000 report: **SUMMARY:** The Class A (primary contact recreation) uses were assessed as "not supported." The Class B(WW) aquatic life uses were assessed as "fully supported / threatened." Fish consumption uses were assessed as "fully supported." **EXPLANATION:** The assessments of support of beneficial uses are based primarily on results of monitoring conducted on the Iowa River near Rowan from March 1996 to September 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05449500). Results from the USGS/NAWQA station showed that levels of indicator bacteria suggest "nonsupport" of the Class A uses. In summer 1996, the geometric mean of indicator bacteria (fecal coliforms) in the 11 non-runoff-affected samples (299 orgs/100 ml) exceeded the state Class A criterion of 200 orgs/100 ml. Levels of fecal coliforms in 3 of the 11 samples (27%) exceeded the EPA-recommended single-sample maximum value of 400 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting (pgs 3-33 to 3-35 of U.S. EPA 1997b), "nonsupport" of primary contact recreation uses is indicated if geometric mean for fecal coliforms is greater than 200 organisms/100 ml. In addition, USGS switched to E. coli as the bacteria indicator in summer 1997. The geometric mean of E. coli in the 13 non-runoff-affected samples (408 orgs/100 ml) was much greater than the EPA-recommended criterion of 126 orgs/100ml, and 7 of the 13 samples (54%) exceeded the EPA-recommended single sample maximum value (289 orgs/100 ml) for E. coli. According to the U.S. EPA guidelines, these results also suggest "nonsupport" of the Class A uses. Regarding support of the Class B(WW) aquatic life uses, results from the USGS/NAWQA station showed (1) no violations of Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen in the 52 samples collected and (2) a single violation of the Class B(WW) chronic water quality criterion for dieldrin in the 51 samples analyzed. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), the one violation of the chronic criterion for dieldrin does not suggest an impairment of the aquatic life uses. DNR's assessment methodology, however, suggests that the violation of the chronic criterion for dieldrin indicates a "threat" to full support of the aquatic life uses. Fish consumption uses were assessed as "fully supported" based on results of USGS/NAWQA fish tissue monitoring near Rowan in 1995. This monitoring showed that levels of organochlorine contaminants were less than 1/2 of the respective FDA action levels, thus suggesting "full support" of the fish consumption uses (see assessment for the 1998 report above for more information).

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Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

LONG CR

-- mouth to headwaters

Waterbody ID No.: IA 02-IOW-0090

Subsegment No.: 0

Subsegment Description: mouth to S.Fk. Long Cr., Washington Co.

Subsegment Length: 26 miles

ASSESSMENT COMMENTS: 1995 biocriteria: habscri/fshscri=27/12 (shock); 1995 Biocriteria: Fish IBI= 56(good), BM-IBI= 46(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream was assessed at one location immediately dstr. from B(LR) - general use boundary. It is believed that this location may not be representative of most of the B(LR) segment, so a use support assessment was not completed.

For 1996: Data from one biocriteria sampling location in B(LR) segment was used. Habitat and fish metrics developed in stream use assessment project were applied to evaluate aquatic life use support.

For the 1998 report, used a review of the field sheet from the July 1991 DNR stream use assessment in Washington County (near Class B(LR) boundary), and a review of results of the 1995 biocriteria sampling in Louisa County, to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to results of the 1995 DNR biocriteria sampling south of Columbus Junction. This sampling showed (1) presence of an exceptionally diverse fish community (32 species from 9 families) for streams in the Mississippi River portion of the Southern Iowa Rolling Loess Prairies (47f) (or any stream in Iowa), (2) presence of all the expected fish taxa (8 of 8) for streams in this region, and (3) above average aquatic habitats and condition of the riparian corridor. The field sheet from the 1991 DNR stream use assessment indicated extensive infestation of "hookworm" (presume anchorworm) in fish from the SUA site near Washington. No such information was obtained at the 1995 biocriteria site; thus, presume that this condition did not persist. Additional monitoring, however, should be conducted at the 1991 SUA site to ensure that the fish populations in this reach of Long Creek are healthy.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 56 (good) and the BM-IBI score was 46 (fair). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

BIG SLOUGH CR

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 02-IOW-00901

Subsegment No.: 1

Subsegment Description: mouth (S13, T74N, R5W, Louisa Co.) to unnamed trib (NW 1/4, S12,

Subsegment Length: 15 miles

ASSESSMENT COMMENTS: 1995 Biocriteria: Fish IBI= 54 (good), BM-IBI= 48 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports; no water quality information available.

2000 report: The assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 54 (good), and the BM-IBI score was 48 (fair). The aquatic life use support status was assessed as partially supporting (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998. The fish community index score passed the impairment threshold. The benthic macroinvertebrate index was barely below (failed) the threshold largely due to low numbers of mayfly taxa and other sensitive taxa. The sampling results indicate a very slight biological impairment, if any impairment. Resampling is recommended. Available information does not indicate there are obvious pollution sources in the watershed or provide any explanation for the relatively low diversity of mayfly taxa.

N. BRANCH LONG CR

-- General use segment. New segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 02-IOW-0091

Subsegment No.: 0

Subsegment Description: mouth (S26, T75N, R6W, Washington Co.) to headwaters

Subsegment Length: 16 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of a fish kill in August 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996 or 1998 reports: no water quality information available.

For the 2000 report: SUMMARY: The general aquatic life uses of this stream were assessed as "partially supported." EXPLANATION: A fish kill occurred in this stream reach on August 1, 1999, downstream from Ainsworth in Washington County. The kill was attributed to sewage from the Ainsworth municipal wastewater lagoon. An estimated 4,500 fish were killed. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the general aquatic life uses of this stream were assessed as "partially supported."

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Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

HONEY CR

-- mouth to headwaters

Waterbody ID No.: IA 02-IOW-0093

Subsegment No.: 0

Subsegment Description: mouth to road S25,T76N,R5W Louisa Co.

Subsegment Length: 2.7 miles

ASSESSMENT COMMENTS: Habschr/fshscr: 20/12 (fish score incorrect on field sheet (14) due to incorrect No. species & % tolerant); 1998 Biocriteria: Fish IBI= 49(fairly good), BM-IBI= 56(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Prior to 1995, stream not designated for Class B uses; thus, not assessed for the 1994 report.

For the 1996 report, used results of the September 1994 DNR stream use assessment to assess support of the Class B(LR) uses as PS due to (1) habitat score (20) worse than the overall median score (22) for DNR stream use assessments, (2) field notes indicate "frequent" channel alterations (the type of alteration is not indicated, but notes on field sheet indicating "cattle ruin creek below bridge" suggest a pasturing impact). Fish score 12 is above 75th percentile for DNR stream use assessments made with seines, but the 7 species present do not indicate above average water quality or habitat.

For the 1998 report, continued to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report. Based on results of the Sept. 1994 DNR stream use assessment, the fish community of the site assessed is likely typical of Class B(LR) streams in this region. The note on the field sheet that "cattle ruin creek below bridge" suggests that follow-up monitoring is needed to determine status of the aquatic communities and habitats and to determine the degree to which the Class B(LR) aquatic life uses may be impaired. A review of the field sheet from the September 1994 DNR stream use assessment at the Class B(LR)/general boundary shows relatively low fish community diversity (7 species from 3 families) for low gradient streams in the Interior River Lowland ecoregion (72), but two of the characteristic species of this region (golden shiner and blackstripe topminnow) are present. In addition, a slight majority of the expected fish taxa (4 of 7) for this region were present. Continue to assess as PS until additional monitoring is conducted.

For the 2000 report, the assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 49 (fairly good) and the BM-IBI score was 56 (good). The aquatic life use support was assessed as fully supported/ threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

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Iowa River Subbasin

ENGLISH R

-- mouth to South English R.

Waterbody ID No.: IA 02-IOW-0100

Subsegment No.: 1

Subsegment Description: mouth to Ramsey Creek

Subsegment Length: 36 miles

ASSESSMENT COMMENTS:

Assessment is based on results from (1) the DNR monthly water quality monitoring station and (2) USGS/ NAWQA pesticide monitoring near Riverside. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report, assessed as FS due to lack of violations of Class B WQC (also true for the 1990 report).

For the 1994 report, assessed as FST due to known impacts from agricultural nonpoint sources.

For the 1996 report, had no violations of the Class B(WW) aquatic life criteria in 24 samples over two years; thus, assess support of Class B(WW) uses as FST due to threat of agricultural nonpoint sources and channel alterations upstream in the watershed.

For the 1998 report, used results from the DNR monthly WQ monitoring station at Riverside to develop assessments of support of designated uses. The Class B(WW) aquatic life uses were assessed as FS: none of the 24 samples collected during the Oct 95-Sep 97 period violated chronic or acute Class B(WW) WQ criteria; one of 24 samples violated the Class B(WW) WQ criterion for dissolved oxygen (2.8 mg/l on February 8, 1996). Because less than 10% of samples violated this criterion, support of aquatic life uses is assessed as FS (see p. 3-17 of Supplement to the U.S. EPA Guidelines for Preparation of the 1998 Section 305(b) reports). Overall support assessed as FST due to known threats from nonpoint source pollution.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were assessed as "fully supporting / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The assessments of support of beneficial uses are based (1) on results of DNR monthly water quality monitoring conducted on the English River near Riverside during the 1998-1999 biennial period and (2) on results of pesticide monitoring conducted from April 1996 to August 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05455570). None of the 24 samples collected during the 1998-1999 biennial period violated Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen; no violations occurred in the one sample analyzed for toxic metals. Although these results suggest "full support" of the Class B(WW) uses, results of the USGS/NAWQA pesticide monitoring suggest that these uses be assessed as "fully supported / threatened." One of 29 samples analyzed for pesticides contained chlorpyrifos above the Class B(WW) chronic criterion. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), this one violation of a toxic contaminant does not suggest an impairment of the aquatic life uses. Based on DNR's assessment methodology for Section 305(b) reporting, this violation suggests that the Class B(WW) aquatic life uses should be assessed as "fully supported/threatened." Support of the fish consumption uses remains "not assessed" due to the lack of recent fish contaminant monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

ENGLISH R

-- mouth to South English R.

Waterbody ID No.: IA 02-IOW-0100

Subsegment No.: 2

Subsegment Description: Ramsey Creek to South English R.

Subsegment Length: 36 miles

ASSESSMENT COMMENTS: Assessment is based on results of a DNR stream use assessment in September 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

As of Sept. 1994, reach not yet designated in Iowa WQS; reach not assessed for 1994 report. Reach designated for Class B(WW) aquatic life uses in June 1995.

For 1996 report, used results of two DNR stream use assessments to assess the Class B(WW) aquatic life uses as FST due to (1) presence of primary sport fish species (channel catfish) in both collections, (2) field notes that indicate "many holes too deep to seine; lots of tree snags," (3) indication on review forms that reaches assessed are not extensively channelized (and extensive channelization is the primary impact to support of aquatic life uses in the English River basin; i.e., leads to reduction in habitat locally and destabilization of stream banks in downstream reaches; and (4) riparian area strongly to moderately timbered.

For the 1998 report, used a review of the field sheets from the October 1990 and September 1994 DNR stream use assessments in Washington County to continue to assess support of the Class B(WW) aquatic life uses as FST due to (1) indications of good water quality at the DNR WQ monitoring station at Riverside, (2) presence of a majority of the expected fish taxa (6 of 8) in the 1994 assessment, (3) presence of the expected game fish species (channel catfish) in both assessments, and (4) indications on field sheets of relatively few impacts to physical characteristics of this stream reach, with frequent streambank erosion a problem. Both the 1990 and 1994 assessments were hindered by water too deep to wade and sample. Additional monitoring is needed to better define the aquatic communities and habitats of this stream.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the September 1994 DNR stream use assessment in Washington County. The results of the 1994 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

OLD MANS CR

-- mouth-Johnson to headwaters

Waterbody ID No.: IA 02-IOW-0150

Subsegment No.: 0

Subsegment Description: mouth to Hog Run S6,T79N,R10W Iowa Co.

Subsegment Length: 40 miles

ASSESSMENT COMMENTS: Assessment based on (1) 1994 DNR biocriteria sampling: BM-IBI= 67(good) and (2) USGS/NAWQA water quality monitoring (1996-98). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Used data from 1994 biocriteria site in Johnson County to update use support determination. Fish and habitat metrics from stream use assessment protocol were applied to the data. Habitat quality was fairly good. A lot of snag habitat and diversity of current and depth in reach sampled. Water clarity was poor at time of sampling making it difficult to catch fish. Reasonably good diversity of fish for B(LR) stream including channel catfish, gar and walleye.

For the 1998 report, continue to use assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST); this assessment was based on DNR biocriteria sampling in August 1994. Used results of fish tissue monitoring conducted for the USGS National Water Quality Assessment (NAWQA) program to develop the assessment of support of fish consumption uses. The composite sample of whole-fish carp collected in September 1995 was analyzed for several organochlorine compounds, including chlordane, dieldrin, DDT, and PCBs. Levels of all contaminants were well-below 1/2 of the respective FDA action levels for these contaminants. Thus, support of fish consumption uses was assessed as fully supported (FS). For more information on the USGS fish tissue study, see USGS Fact Sheet FS-027-97 (March 1997). Reviews of field sheets from DNR stream use assessments in 1991 and from the 1994 DNR biocriteria sampling are inconclusive due to presence of many snags and water too deep to wade and sample (e.g, from 25 to 50% of the reach sampled for the 1994 biocriteria project was too deep to sample). In general, however, habitat conditions are reported as good due to these conditions: deep water with snags. Additional monitoring is necessary to better define the aquatic communities of this stream. Summary of biological sampling: DNR stream use assessments, species/families, dstr-> upstr: 4/2, 5/1, 7/2; taxa present vs. expected: 2 of 8, 3 of 8, 3 of 8; biocriteria sampling: 10 species from 5 families, with 6 of the 8 expected fish taxa present (very few numbers of fish/species reported, with a total of 41 fish over all species).

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." EXPLANATION: The assessment of support of the Class B(LR) uses is based on results of (1) monitoring conducted on Old Mans Creek near Iowa City from March 1996 to September 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05455100) and (2) a DNR biocriteria sampling in August 1994. Results of the USGS/NAWQA monitoring showed no violations of Class B(LR) water quality criteria in the 39 samples analyzed for pH, dissolved oxygen, and ammonia. In addition, no violations of Class B(LR) chronic criteria occurred in the 24 samples analyzed for toxic organic compounds and pesticides. Although the monitoring results for conventional and toxic parameters suggests "full support" of the aquatic life uses, the assessment of "fully supported / threatened" is used due to concerns with results of past biological monitoring. Additional biological monitoring is needed to better determine the status of the aquatic communities of this stream. Although results of USGS/NAWQA monitoring in September 1995 suggest that fish consumption uses are "fully supported" (see assessment for the 1998 report above), Class B(LR) streams are not considered designated for fish consumption uses.

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Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

BEAR CR

-- mouth-Iowa to headwaters

Waterbody ID No.: IA 02-IOW-0180

Subsegment No.: 2

Subsegment Description: L Bear Cr to S21,T81N,R16W Poweshiek Co

Subsegment Length: 39 miles

ASSESSMENT COMMENTS: Assessment is based on results of a DNR stream use assessment in August 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of August 1994 DNR stream use assessment to assess support of B(LR) aquatic life uses as FST due to (1) habitat score (23) better than overall median habitat score for DNR stream use assessments from 1990-1995; (2) fish score (13) better than 75th percentile score for assessments made with seines, (3) presence of 12 fish species, with less than half pollution tolerant, (4) comments on field sheet indicating "very rocky hindering effective seining." Field sheet indicates above average habitat and aquatic community for region. Stream segment arbitrarily defined at confl with L. Bear Cr. due to relatively poor habitat/aquatic life conditions observed downstream.

For the 1998 report, used a review of the field sheet from the August 1994 DNR stream use assessment in Poweshiek County to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (12 species from 4 families) for streams in the Southern Iowa Rolling Loess Prairies subcoregion (47f), (2) presence of a majority of the expected fish taxa (6 of 8) for streams in this subregion), and (3) indications on field sheet of above average habitat quality, especially due to diverse substrates and presence of several pool/riffle sequences. As indicated on field sheet, the most significant impacts to the physical characteristics of this stream are frequent channel alterations (unspecified) and frequent stream bank erosion.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1996 and 1998 reports (see above) that was based on the August 1994 DNR stream use assessment in Poweshiek County. The results of the August 1994 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

BUCKEYE CR

-- mouth to headwaters

Waterbody ID No.: IA 02-IOW-0186

Subsegment No.: 0

Subsegment Description: mouth to trib S22,T82N,R12W Benton Co.

Subsegment Length: 4.8 miles

ASSESSMENT COMMENTS: Assessment is based on results of a DNR stream use assessment in August 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of August 1994 DNR stream use assessment to assess the B(LR) aquatic life uses as FST due to (1) habitat score (23) better than the overall median score (22) for DNR stream use assessments, (2) fish score (12) better than the 75th percentile score (10) for stream assessments made with seines, (3) information from field sheets indicating relatively minor channel alterations and presence of several pool/riffle sequences in the reach assessed; very diverse substrate also reported, and (4) relatively diverse fish community with 13 species from four families represented.

For the 1998 report, used a review of the field sheet from the August 1994 DNR stream use assessment in Benton County to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of a moderately diverse fish community (13 species from 4 families) for streams in the Southern Iowa Rolling Loess Prairies subcoregion (47f), (2) presence of nearly all the expected fish taxa (7 of 8, including all expected families) for streams in this subregion, and (3) indications on field sheet of above average habitat quality (see 1996 assessment above). Frequent streambank erosion was identified as a threat to the stream. Results of the aquatic species evaluation, however, suggests that the impact of this erosion on either the fish community or habitat quality is minimal.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the August 1994 DNR stream use assessment in Benton County. The results of the August 1994 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

RICHLAND CR

-- mouth (Tama) to headwaters

Waterbody ID No.: IA 02-IOW-0205

Subsegment No.: 0

Subsegment Description: mouth to Abes Fk S20,T82N,R15W Tama Co.

Subsegment Length: 12 miles

ASSESSMENT COMMENTS: 1992 SUAs: habsrcs/fshscrs=23/11, 20/11 (shock); 199_ Biocriteria: Fish IBI= 42(fair), BM-IBI= 64(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. forms indicate slightly below avg. habitat quality. Rel. little diversity of substr. and development of pool/riffle sequences. Frequent/extensive stream bank erosion noted. Stream channel appears to be susceptible to damage from high flows. Fairly diverse fish community including game fish species observed at downstr. location. Close proximity to Iowa River probably influences fish comm. there. Lower diversity observed at the upstr. location. Map suggests extensive channeliz. in some segments of the stream.

For the 1996 report: Used data from one biocriteria sampling site to make use support determination. Fish and habitat metrics from stream use assessment protocol were applied to the data. Habitat alteration caused by off-site flow (channelization) impacts and sediment deposition appear to be main causes of use impairment. Despite habitat degradation, the stream supports a fairly abundant and diverse fish community. Borderline assessment call between PS and FST.

For the 1998 report, used a review of the two June 1992 DNR stream use assessments, and the results of the September 1995 DNR biocriteria sampling, to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to (1) presence of relatively diverse fish communities (species/ families, dstr->upstr: 14/6; 18/5; 7/2) for streams in the Southern Iowa Rolling Loess Prairies subecoregion, (2) presence of a majority of the expected fish taxa (5 of 8 & 7 of 8 at the two downstream sites) for streams in this subregion, and (3) indications on SUA field sheets of a well-meandered channel form with a tree-dominated riparian area. As noted in the assessment developed for the 1996 report, channel alteration (channelization) and sedimentation appear to be the primary impacts to the physical characteristics of this stream.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 42 (fair) and the BM-IBI score was 64 (good). The aquatic life use support was assessed as fully supported (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

MINERVA CR

-- mouth (Marshall) to headwaters

Waterbody ID No.: IA 02-IOW-0250

Subsegment No.: 0

Subsegment Description: mouth to trib S33,T86N,R21W Hardin Co.

Subsegment Length: 20 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish surveys conducted by Iowa State University (see Kaminski et al. 1995). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. forms generally indicate fair habitat quality. Where assessed in lower reaches of B(LR) segment, stream was wide & rel. shallow w/ shifting sand substr. dominant. Frequent row cropping along corridor and extensive str. bank erosion were noted. Somewhat better habitat was observed in upstr. reaches, but impacts from past high flows were still evident. Fair diversity of fish species (all cyprinids) were observed.

For 1996 report, used results of DNR stream use assessments in May 1992 and from surveys of Kaminski in 1995 to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat scores from the 1992 assessments (24, 23) better than the overall median score (22) for DNR stream use assessments, (2) results of surveys by Kaminski (ISU Dept. of Animal Ecology) that show very diverse fish community (26 species from 7 families) including the state-threatened American brook lamprey. Thus, based on more recent and intensive sampling, change the 1994 assessment of support of aquatic life uses (PS) to FST.

For the 1998 report, used a review of the field sheets from the May 1992 DNR stream use assessments and data from the report "A survey of fishes in unprotected tributaries of the Iowa River" by Kaminski et al. (1995) to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of relatively diverse fish communities (ISU data, species/families, dstr->upstr: 19/6; 15/4; 15/5), (2) presence of all, or nearly all, of the expected fish taxa at the three ISU sites (8 of 8; 6 of 8; 7 of 8), and (3) indications of relatively good aquatic habitats. Results of the May 1992 DNR stream use assessments indicate that frequent channel alterations and extensive streambank erosion are problems in the lower reaches of Minerva Creek, with habitat quality improving upstream. Several environmentally sensitive species were reported from the ISU survey, including largescale stoneroller, northern hogsucker, smallmouth bass, and slenderhead darter.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." EXPLANATION: Due to the lack of more recent water quality information, continue to use the assessment developed for the 1998 report that was based primarily on the three 1995 fish surveys by Iowa State University (see above). The results of the 1995 ISU surveys are approximately 5 years old and thus can be used to assess current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

HONEY CR

-- mouth (Marshall) to headwaters

Waterbody ID No.: IA 02-IOW-0260

Subsegment No.: 0

Subsegment Description: mouth to trib S15,T86N,R20W Hardin Co.

Subsegment Length: 22 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish surveys conducted by Iowa State University (see Kaminski et al. 1995). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully

Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates below avg. habitat quality. Fairly diverse substr. found but generally wide and shallow conditions prevail. Extensive channeliz. noted. Rel. low diversity of fish observed.

For 1996 report, used results from sampling by ISU graduate student Mike Kaminski in 1995 at three locations in the lower reaches of Honey Creek to change the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to (1) presence of a very diverse fish community (27 species from 6 families) and (2) presence of the state-threatened American brook lamprey. As noted for the 1994 assessment, support of uses are certainly threatened by stream channelization, streambank erosion, and pasturing of the riparian zone. Animal feeding operations in the watershed also threaten support of aquatic life uses.

For the 1998 report, used a review of the field sheet from the May 1992 DNR stream use assessment in Hardin County, and the data from Kaminski et al. (1995), to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of very diverse fish communities (species/families, dstr->upstr: 23/6; 15/4; 24/5) for streams in the Southern Iowa Rolling Loess Prairies subcoregion (although the adjacent 47b subregion likely contributes to this high diversity), (2) presence of all, or nearly all, the expected fish taxa (8 of 8, 6 of 8, & 8 of 8) for streams in this subregion, (3) indications of relatively good aquatic habitats, and (4) presence of several environmentally sensitive species, including American brook lamprey, largescale stoneroller, northern hogsucker, and smallmouth bass. The May 1992 DNR stream use assessment indicated below average habitat quality, showed less than a majority of the expected fish taxa (4 of 8), and showed relativey poor fish community diversity (8 species from 2 families). This assessment, however, was conducted in the general use reach of this stream. The May 1990 DNR stream use assessment conducted in the Class B(LR) reach south of New Providence did not include collection of fish but indicated above average habitat quality.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported." EXPLANATION: Due to the lack of more recent water quality information, continue to use the assessment developed for the 1998 report that was based primarily on the three 1995 fish surveys by Iowa State University (see above). The results of the 1995 ISU surveys are approximately 5 years old and thus can be used to assess current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

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Iowa River Subbasin

IOWA R, S FK

-- mouth to confl. w/ Tipton Crk.

Waterbody ID No.: IA 02-IOW-0270

Subsegment No.: 0

Subsegment Description: mouth to Tipton Cr.

Subsegment Length: 7.8 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) USGS/NAWQA monitoring of water quality (1996-1998) and fish tissue (1995), (2) occurrence of fish kills in the watershed and (3) a September 1995 DNR stream use assessment.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of DNR stream use assessment in Hardin County (3 miles NNW of New Providence) to assess support of the Class B(WW) aquatic life uses as FST due to (1) habitat score (25) better than the overall median score for DNR stream use assessments, (2) fish score (12) equal to the 75th percentile for stream assessments made with electrofishing, (3) presence of game fish (channel catfish and smallmouth bass, (4) presence of a very diverse fish community with over 20 species. Reach is threatened by agricultural NPS pollution and by animal feeding operations in the watershed.

For the 1998 report, continue to use the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST). Fish kills related to animal feeding operations continue to occur in this watershed (e.g., S. Fk. Iowa R near Blairsburg in August 1997, Tipton Cr. S of Williams in August 1996 and in July 1998), and aquatic life uses of the lower South Fork Iowa River remain threatened as a result of these kills and the potential negative water quality impacts related to livestock waste (especially ammonia and phosphorus). Used results of USGS fish tissue monitoring conducted near New Providence in September 1995 for the National Water Quality Assessment (NAWQA) program to develop an assessment of support of fish consumption uses. The whole-fish composite sample of carp from this site was analyzed for several organochlorine compounds, including chlordane, dieldrin, DDT, and PCBs. Levels of all contaminants in the sample were less than 1/2 of the respective FDA action levels, thus suggesting full support (FS) of fish consumption uses. For more information on the USGS fish tissue study, see USGS Fact Sheet FS-027-97 (March 1997). A review of the field sheet from the September 1990 DNR stream use assessment in Hardin County shows a very diverse fish community of 21 species from 5 families, nearly all the expected fish taxa (9 of 11) for streams in the Des Moines Lobe subecoregion (47b), presence of the expected game fish species (smallmouth bass and channel catfish), presence of several environmentally sensitive species (e.g., banded darter, smallmouth bass, northern hogsucker, and tadpole madtom), and above average habitat quality. Although fish kills in the headwater reaches of this drainage threaten full support of the Class B(WW) uses, the exceptional diversity during the time of the September 1995 DNR assessment suggest that impacts related to animal waste have not yet affected this lower reach of the South Fork Iowa River.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses are assessed as "fully supported / threatened;" the fish consumption uses remain assessed as "fully supported." EXPLANATION: The assessment of support of the Class B(WW) uses for the 2000 report is based (1) on results of monitoring conducted on South Fork Iowa River near New Providence from March 1996 to August 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05451210) and (2) on the history of fish kills in this watershed (see above). The USGS / NAWQA monitoring showed (1) no violations of Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen in the 38 samples collected and (2) no violations of the Class B(WW) chronic water quality criterion for pesticides in the 22 samples analyzed. Although no fish kills were reported for this reach of the South Fork Iowa River during October 1997-September 1999 biennial period, fish kills continue to occur in this watershed (for example, a fish kill was reported for Tipton Creek in July 1998). In addition, this river reach appears to have elevated levels of nutrients. The mean level of total phosphorus over the March 1996-August 1998 USGS monitoring period was 0.30 mg/l (N=38; SE=0.07 mg/l) with five samples during this period containing over 1.0 mg/l of total phosphorus (maximum = 1.6 mg/l). Thus, based on the results of USGS/NAWQA monitoring and the history of fish kills in this watershed, the Class B(WW) aquatic life uses were assessed as "fully supported / threatened." Fish consumption uses remain assessed as "fully supported" based on results of the USGS/NAWQA fish tissue monitoring in September 1995 that showed levels of organochlorine contaminants were less than 1/2 of the respective FDA action levels and DNR levels of concern (see assessment for the 1998 report above).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

IOWA R, S FK

-- Tipton Creek to headwaters

Waterbody ID No.: IA 02-IOW-0280

Subsegment No.: 1

Subsegment Description: Tipton Cr ->trib S19,T88N,R21W Hardin Co

Subsegment Length: 39 miles

ASSESSMENT COMMENTS: 1995 biocriteria: Habscr/fshscr=28/11 (shock); 1995 SUAs: 28/13 (shock); 20/13 (shock); 1995 Biocriteria: Fish IBI=78 (excellent), BM-IBI=65 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Used data from one 1995 biocriteria sampling location in Hardin County. Fish and habitat data metrics from stream use assessment protocol were applied to data to make use support determination. Excellent fish diversity (36 species). Hog waste spill caused fish kill upstr. from site. Hog waste, livestock grazing and channelization in headwaters are threats to biointegrity of this high quality stream. DNR stream use assessments also suggest that the B(WW) aquatic life uses are FST, but stream is threatened by impacts from animal feeding operations. For example, a fish kill occurred on this stream in July 1995; the cause of the kill was identified as ammonia due to swine waste from SNB farms entering the stream.

For the 1998 report, used a review of the field sheets from the September 1995 DNR stream use assessments W of Eldora and E of Buckeye, and results of the July 1995 biocriteria sampling at Logsdon Park, to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) an exceptionally diverse fish community (species/families: 36/9 (biocriteria); 22/6 & 18/4 from SUAs), (2) presence of all, or nearly all, the expected fish taxa for streams in the Des Moines Lobe subcoregion (47b) (11 of 11 (biocriteria); 10 of 11 and 8 of 11 (SUAs)), (3) presence of the expected game fish species (channel catfish and smallmouth bass; also, northern pike and walleye), and (4) indications on field sheets of relatively good habitat quality. Primary threats to the continued support of the Class B(WW) aquatic life uses are reoccurring fish kills in the upstream reaches of this stream. Despite the treat from fish kills, the middle and lower reaches of streams in the South Fork Iowa River drainage are some of the most biologically diverse streams in central Iowa.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 78 (excellent) and the BM-IBI score was 65 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

IOWA R, S FK

-- Tipton Creek to headwaters

Waterbody ID No.: IA 02-IOW-0280

Subsegment No.: 2

Subsegment Description: trib to trib S35,T90N,R23W Wright Co.

Subsegment Length: 39 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of fish kills. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. forms indicate below avg. habitat quality as a result of extensive stream channeliz. Very little diversity of substr. and habitat observed. Some reaches have tree canopy which results in woody debris snags in the stream. Moderate diversity of fish observed.

For 1996 report, use the assessment of the Class B(LR) aquatic life uses developed for the 1994 report (=PS).

For 1998 report, continue to use the assessment of support of the aquatic life use developed for the 1994 report (=PS). In addition, fish kills in July 1995 and August 1997, both due to illegal discharge of hog manure, suggest an impairment to the aquatic life uses in the upper reaches of the stream. A review of the field sheets from the DNR stream use assessment in May and June, 1992, shows (1) fish communities with relatively poor diversity (7 species from 1 family) to moderate diversity (13 species from 4 families) for streams in the Des Moines Lobe subcoregion, (2) presence of a majority of the expected fish taxa (7 of 11) at only one of two assessment sites, and (3) indications of impacts to the physical characteristics of this stream from extensive channelization. Follow-up monitoring is needed to better define the status of the aquatic communities in the stream reach and to determine the degree to which the Class B(LR) uses may be impaired, especially by residual effects of illegal/accidental discharges of animal waste.

For the 2000 report: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: The previous assessment of support of the Class B(LR) uses ("partially supported"; see assessment for the 1998 report above) was based primarily on the occurrence of two fish kills on this stream reach within a two-year period (July 1995 to August 1997). The 1998 assessment was also based on the results of DNR stream use assessments in May and June of 1992. Fish kill information from the 1997 kill was used for the current assessment; the results of the 1992 stream assessments, however, are greater than five years old and are thus considered too old to be useful for assessing current water quality conditions. The most recent fish kill in this stream reach occurred in August 1997; this kill was caused by the illegal discharge of hog manure. According to DNR's assessment methodology for Section 305(b) reporting, the occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the Class B(LR) aquatic life uses remain assessed as "partially supported" due to fish kills. As stated in the assessment for the 1998 report, follow-up monitoring is needed to better define the status of the aquatic communities in the stream reach and to determine the degree to which the Class B(LR) uses may be impaired, especially by residual effects of illegal/accidental discharges of animal waste.

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Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

BEAVER CR

-- mouth (Hardin) to headwaters

Waterbody ID No.: IA 02-IOW-0290

Subsegment No.: 0

Subsegment Description: mo to S Beaver Cr S28,T88N,R20W Hardin

Subsegment Length: 8.8 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish surveys conducted by Iowa State University (see Kaminski et al. 1995). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully

Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the May 1992 DNR stream use assessment and results of the summer 1995 fish/habitat assessment by ISU graduate student Mike Kaminski to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (27) much better than the overall median score (22) for DNR stream use assessments, (2) indication on DNR field sheet of diverse substrates, several pool/riffle sequences, and only isolated pasturing impacts to riparian zone and stream banks, and (3) sampling by Kaminski in 1995 that showed presence of 18 fish species including 3 darter species and smallmouth bass. Relatively low fish score (9; seine) likely due to high flows during sampling and due to rocky substrates. Field sheet suggests that overpasturing of riparian zone, and impact to stream bank stability is the primary threat to the continued support of the Class B(LR) aquatic life uses.

For the 1998 report, used a review of data from 1995 reported by Kaminski et al (1995) for the two of their assessment sites in the Class B(LR) reach of Beaver Creek to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of a relatively diverse fish community (species/families, dstr->upstr: 14/5, 17/4) for headwater streams in the Des Moines Lobe subcoregion (47b), (2) presence of nearly all the expected fish taxa (9 of 11 at both sites) for streams in this subregion, and (3) indications of good habitat quality, including diverse substrates and presence of several pool/riffle sequences. Kaminski et al. (1995) reported that Beaver Creek had relatively poor scores for habitat quality compared to other streams sampled (i.e., Tipton Creek, Honey Creek, and Minerva Creek). Nonetheless, all streams were considered to be worthy of "protected" status as described in Chapter 72 of the Iowa Administrative Code.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported." EXPLANATION: Due to the lack of more recent water quality information, continue to use the assessment developed for the 1998 report that was based primarily on the three 1995 fish surveys by Iowa State University (see above). The results of the 1995 ISU surveys are approximately 5 years old and thus can be used to assess current water quality conditions.

Rivers and Streams: Iowa-Cedar River Basin

*Iowa River Subbasin***TIPTON CR**

-- mouth (Hardin) to headwaters

Waterbody ID No.: IA 02-IOW-0300

Subsegment No.: 1

Subsegment Description: mo->trib SE 1/4 S17,T87N,R21W, Hardin Co

Subsegment Length: 19 miles

ASSESSMENT COMMENTS: Assessment is based on (1) results of fish surveys by Iowa State University (see Kaminski et al. 1995) and (2) occurrence of fish kills in the Tipton Creek watershed. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Assessed in lower reaches of B(LR) segment and upper reaches of B(LR) segment. Downstr. assessment was in meandering section of stream where habitat & fish community were both found to be very diverse (22 spp; 6 fams). Several game fish spp. were observed. Upstr. assessment was in extensively channel. section where habitat quality and fish diversity were generally fair. Pool/riffle development found lacking due to channelization.

For 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST). Stream is one of the highest quality tributaries in the entire Iowa River drainage. Stream is threatened by channelization, especially in headwater reaches and by livestock-related fish kills that periodically occur.

For the 1998 report (1) divided this waterbody into two subsegments to reflect the upstream (channelized) reach and the downstream (meadered) reach and (2) continued to assess support of the Class B(LR) aquatic life uses as FST with the primary threat from reoccurring fish kills caused by animal feeding operations in the watershed. Additional monitoring is needed to update the assessment and to determine the status of aquatic communities and habitats, especially following the extensive fish kills in August 1996 and July 1998 that occurred near Williams, IA. Problems with reoccurring fish kills in Tipton Creek were highlighted in the August 1, 1998 Des Moines Register. A review of the field sheet from the May 1992 DNR stream use assessment 6 mi SW of Eldora, and the results of sampling at three locations by Kaminski et al. (1995) suggests that, in the absence threats from fish kills, this streams would fully support its Class B(LR) aquatic life uses. Results of DNR and ISU sampling show that this reach Tipton Creek supports one of the most diverse fish communities of any Iowa stream: species/families, dstr->upstr: 22/5 (1992) & 30/5 (1995) same location), 27/5, and 22/5. All, or nearly all of the expected fish taxa for streams in the Des Moines Lobe subcoregion (47b) were present (dstr->upstr: 11 of 11 (both DNR & ISU), 10 of 11, and 11 of 11). In addition, Tipton Creek was rated as having the best habitat of the four streams examined in Kaminski et al. (1995), and the aquatic habitat score from the 1992 DNR stream use assessment was well above average.

For the 2000 report: The Class B(LR) aquatic life uses remained assessed as "fully supported / threatened." EXPLANATION: Continue to use the previous assessment of support of the Class B(LR) uses developed for the 1998 report (see above). This assessment was based on (1) results of three fish surveys conducted by Iowa State University in 1995 and (2) occurrence of fish kills in August 1996 and July 1998 in the upstream reach of Tipton Creek (IA 02-IOW-0300-2). The 1998 assessment was also based on the results of a DNR stream use assessment in May 1992. The results of this stream assessment, however, are greater than five years old and are thus considered too old to be useful for assessing current water quality conditions. Although no fish kills have been reported for Tipton Creek since the kill on the upper segment in July 1998, the potential for additional kills in this fishkill-plagued watershed suggests a continuing threat to the full support of the Class B(LR) aquatic life uses. As stated above, the lower reach of Tipton Creek has historically demonstrated high quality aquatic habitats and exceptional diversity of aquatic life for an Iowa stream. In the absence of impacts from fishkills, this stream reach would likely "fully support" its aquatic life uses.

Rivers and Streams: Iowa-Cedar River Basin

Iowa River Subbasin

TIPTON CR

-- mouth (Hardin) to headwaters

Waterbody ID No.: IA 02-IOW-0300

Subsegment No.: 2

Subsegment Description: trib->New York Br S28,T88N,R22W, Hardin

Subsegment Length: 19 miles

ASSESSMENT COMMENTS: Assessment is based on the occurrence of fish kills. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

[Waterbody subsegment created in 1998 due to differences in channel forms in Tipton Creek upstream from Hwy 65 (extensively channelized) versus downstream from Hwy 65 (primary meandered). Repeated occurrence of fish kills upstream from Hwy 65 also a factor in the decision to create subsegments.]

For the 1998 report, used results of the May 1992 DNR stream use assessment as well as records of recent fish kills to develop the assessment of support of the Class B(LR) aquatic life uses. The May 1992 stream use assessments suggest that this reach of Tipton Creek is extensively channelized with relatively diverse substrates with side pools and undercut banks providing the best aquatic habitats. Nine species of fish from three families were captured, with a majority of the species typical of Class B(LR) streams occurring. Although results of this assessment suggests that the Class B(LR) aquatic life uses are supported, the occurrence of recent fish kills suggests an impairment. Fish kills occurred in this reach of Tipton Creek in August 1996 (46,000 fish estimated killed) and July 1998 (93,000 fish estimated killed over a 12-mile reach). Both fish kills were caused by discharge of animal waste from animal feeding operations located near Williams, IA (the problems with repeated fish kills in Tipton Creek were highlighted in the August 1, 1998 Des Moines Register). Thus, due to reoccurring fish kills, the Class B(LR) aquatic life uses of this reach of Tipton Creek were assessed as "partially supported" due to toxic levels of ammonia from animal feeding operations. Follow-up monitoring is needed to determine the degree to which the Class B(LR) uses may be impaired by the residual effects of the accidental/illegal discharge of animal waste to this stream.

For the 2000 report: The Class B(LR) aquatic life uses remained assessed as "partially supported." EXPLANATION: Continue to use the previous assessment of support of the Class B(LR) uses developed for the 1998 report (see above). This assessment was based primarily on the occurrence of extensive fish kills near Williams, IA, in August 1996 and July 1998. The 1998 assessment was also based, in part, on the results of a DNR stream use assessment in May 1992. The results of this stream assessment, however, are greater than five years old and are thus considered too old to be useful for assessing current water quality conditions. The most recent fish kill occurred near Williams, IA, on July 20, 1998 (see above). This kill began approximately 2 miles upstream from the Hamilton / Hardin county line; approximately 11 miles of stream were affected. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." The occurrence of the extensive fish kill in July 1998, and the potential for additional kills in this fishkill-plagued watershed, suggest a continuing impairment to the Class B(LR) aquatic life uses.

Rivers and Streams: Iowa-Cedar River Basin

Shell Rock River Subbasin

SHELL ROCK R

-- Winnebago R to IA/MN line

Waterbody ID No.: IA 02-SHL-0020

Subsegment No.: 0

Subsegment Description: Winnebago R to IA/MN state line

Subsegment Length: 46 miles

ASSESSMENT COMMENTS: Assessment is based on results of water quality monitoring conducted by Minnesota PCA at Gordonville, MN, approx 1 mi N of state line. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, 1 of 2 samples exceeded chronic criterion for copper; fecal coliforms exceeded WQC in 8 of 11 valid samples; thus, assess Class B as FST and Class A as NS.

For 1994 report, still see the 1 of 2 samples exceeding the copper criterion; 3 of 6 valid samples exceed Class A WQC. Due to lack of sufficient data to meet completeness criteria, use BPJ to assess Class A at PS and Class B as FST. Levels of all contaminants in carp samples for 1993 RAFT <1/2 FDA action levels.

For 1996 report, had no violations of Class B WQC. Four of the six samples collected during 1994 exceeded the Class A WQC. Due to lack of sufficient data to meet completeness criteria (i.e., 10 non flow-affected samples over the biennial period), assessed support of Class A uses as PS; assessed support of Class B(WW) uses as FST due to known threats from agricultural nonpoint sources.

For the 1998 report, used results of the monthly WQ monitoring station near Gordonville operated by the Minnesota Pollution Control Agency to develop assessments of use support. The Class B(WW) aquatic life uses were assessed as FS due to the lack of violations of WQ criteria for either toxic or conventional pollutants in the 18 samples collected during the Oct 95-Sep 97 period. Considered the Class A primary contact uses as "not assessed" due to lack of data: data for fecal coliforms not reported in STORET for the Gordonville station since September 1994. The March/April 1998 edition of the Iowa Conservationist notes that smallmouth bass populations have recovered in this river, with the reach in Cerro Gordo county providing good angling opportunities. DNR received a citizen complaint in June 1997 regarding "pea soup green" conditions in this reach of river. The citizen was familiar with the pollution history of the Shell Rock, but he had noticed a general decline during the years 1995 to 1997. DNR Fisheries feels that the WQ of the river has improved through the 1990s and that the river tends to run "green" in summer.

For the 2000 report: SUMMARY: The Class A uses remain "not assessed;" the Class B(WW) aquatic life uses remain assessed as "fully supported / threatened." Fish consumption uses were assessed as "fully supported." EXPLANATION: Due to problems with data acquisition, the assessments of support of the Class A uses ("not assessed") and the Class B(WW) uses ("fully supported / threatened) developed for the 1998 report (above) were used for the 2000 report. Although the 1996-1997 monitoring results from the MPCA station near Gordonville suggest "full support" of the Class B(WW) aquatic life uses, the apparent nutrient enrichment of this river reach should be considered a "threat" to full support. Anecdotal information received by DNR/EPD over the last five years suggests that growth of phytoplankton is excessive, especially in the upper reaches of the Shell Rock River. Fish consumption uses were assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring south of Northwood in 1999 that showed (1) very low levels of very few contaminants in the composite sample of carp fillets (4 of 23 contaminants were above detection levels) and (2) levels of all contaminants were much less than 1/2 of their respective FDA action levels.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Shell Rock River Subbasin

FLOOD CR

-- mouth (Butler) to headwaters

Waterbody ID No.: IA 02-SHL-0021

Subsegment No.: 0

Subsegment Description: mo to Beaver Cr S36,T95N,R17W Butler Co.

Subsegment Length: 17 miles

ASSESSMENT COMMENTS: Assessment is based on results of USGS/NAWQA water quality monitoring near Powersville from 1996 to 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the June 1992 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (26) better than the overall median score (22) for DNR stream use assessments, (2) indication on field sheet of moderately diverse substrates, several pool/riffle sequences, only isolated channel alterations, and relatively stable stream banks, (3) fish score (10) equal to the 75th percentile score for stream use assessments made with seines, and (4) notes on field sheet indicating presence of high quality fish habitat in form of rocks and snags.

For the 1998 report, continue to use the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST). In addition, used results of fish tissue monitoring conducted for the USGS National Water Quality Assessment (NAWQA) program in the eastern Iowa river basins study area to assess support of the fish consumption uses as FS. The whole fish composite sample of white sucker was analyzed for several organochlorine compounds, including chlordane, dieldrin, DDT, and PCBs. Levels of these contaminants were all below the respective FDA action levels, thus suggesting full support of fish consumption uses. For more information, see USGS Fact Sheet FS-027-97 (March 1997). A review of the field sheet from the June 1992 DNR stream use assessment in Floyd County shows that only three cyprinid species representing 3 of the 11 expected fish taxa for the Iowan surface subcoregion were captured from the assessment site on Flood Creek. Notes on the field sheet indicate that rocks and snags prevented effective seining. Additional monitoring is needed with electrofishing equipment to better define the status of the aquatic communities of this stream. The field sheet does not indicate any significant threats to the physical characteristics of this stream at the site assessed.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses are assessed as "fully supported / threatened." EXPLANATION: The assessments of support of beneficial uses are based on results of water quality monitoring conducted on Flood Creek near Powersville (Floyd County) from March 1996 to September 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05461390). Monitoring at this USGS/NAWQA station showed (1) no violations of Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen in the 34 samples collected, and (2) a single violation of the Class B(WW) chronic water quality criterion for DDE in the 21 samples analyzed. Although the results for pH, dissolved oxygen, and ammonia-nitrogen suggest full support of the Class B(LR) aquatic life uses, the single violation of the water quality criterion for DDE suggests that these uses should be assessed as "fully supported / threatened." According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), this one violation of a toxic contaminant does not suggest an impairment of the aquatic life uses. Based on DNR's assessment methodology for Section 305(b) reporting, however, this violation suggests that the Class B(WW) aquatic life uses should be assessed as "fully supported/threatened." In addition, the inconclusive results of the DNR stream use assessment in 1992 suggests that additional biological monitoring should be conducted to better determine the status of the aquatic communities of this stream reach. Results of USGS/NAWQA fish tissue monitoring in September 1995 showed that levels of organochlorine contaminants were less than 1/2 of the respective FDA action levels and DNR levels of concern (see assessment for the 1998 report above). Although results of this monitoring suggest that fish consumption uses are "fully supported," Iowa's Class B(LR) streams are not considered designated for fish consumption uses. Thus, these uses were "not assessed."

Rivers and Streams: Iowa-Cedar River Basin

Shell Rock River Subbasin

COLDWATER CR

-- mouth (Butler) to headwaters

Waterbody ID No.: IA 02-SHL-0023

Subsegment No.: 0

Subsegment Description: mo to trib S26,T94N,R19W Cerro Gordo Co.

Subsegment Length: 23 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR biocriteria monitoring in July 1996: Fish IBI=34 (fair); BM-IBI=81 (excellent). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates fairly good habitat quality. Some diversity of substr. and a few pool/riffle sequences observed. Isolated cases of pasture use along stream corridor noted. Moderate diversity of fish species observed. Fish community dominated by generalist/tolerant species. Estimated flow (0.5 cfs) was surprisingly low given the size of the watershed. Losing stream?

For the 1996 report: used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST). Continued support of uses is threatened by overpasturing of riparian zone and by fish kills caused by mismanagement of livestock waste.

For the 1998 report, used results of the 1992 DNR stream use assessment, and the 1996 DNR biocriteria sampling to continue to assess support of the Class B(LR) aquatic life uses as FST. The 1996 biocriteria sampling showed a moderately diverse fish community with most (7 of 11) of the expected fish taxa present. No violations of Class B(LR) water quality criteria occurred in the sample collected during biocriteria sampling. A review of the field sheet from the July 1992 DNR stream use assessment in Butler County shows (1) a moderately diverse fish community (11 species from 4 families), (2) presence of a majority of the expected fish taxa (8 of 11) for streams in the Iowan Surface subecoregion, and (3) indications of above average habitat with only isolated areas of channel alterations due to pasturing and isolated areas of streambank erosion. Although most of the expected fish taxa were present, relatively few individuals per species were present. Results of the 1996 biocriteria sampling, however, show relatively good numbers of individuals per species.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 34 (fair) and the BM-IBI score was 81 (excellent). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Shell Rock River Subbasin

ELK CR

-- mouth (Worth) to headwaters

Waterbody ID No.: IA 02-SHL-0030

Subsegment No.: 0

Subsegment Description: mouth to E line S13,T99N,R22W Worth Co.

Subsegment Length: 12 miles

ASSESSMENT COMMENTS: Assessment is based on results of a DNR stream use assessment in November 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the November 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as PS due to (1) habitat score (21) less than the overall median score (22) for DNR stream use assessments, (2) fish score (7) worse than the 75th percentile score (10) for stream assessments made with seines (although the field sheet notes that large boulders and muck hindered effective seining), and (3) indications on field sheet of little substrate diversity, few pool/riffle sequences, and frequent channel alterations due to over pasturing.

For the 1998 report, continued to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=PS). Review of the field sheet from the November 1994 DNR stream use assessment shows that only one fish species (fathead minnow) was captured during the assessment (although seining efficiency was hindered by large boulders in the stream). Follow-up monitoring is needed to determine the status of the aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1998 report (see above). The results of the November 1994 DNR stream use assessment-upon which the previous assessment of the Class B(LR) uses was based ("partially supported")-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), habitat conditions (boulders) limited sampling effectiveness for fish, and follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired. In addition, results of fish sampling may have been influenced by the relatively late sampling date (November).

Rivers and Streams: Iowa-Cedar River Basin

West Fork Cedar River Subbasin

CEDAR R, W FK

-- Shell Rock R to Hartgraves Cr.

Waterbody ID No.: IA 02-WFC-0020

Subsegment No.: 1

Subsegment Description: Shell Rock R. to Maynes Cr.

Subsegment Length: 34 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) DNR monthly water quality monitoring and (2) USGS/NAWQA pesticide monitoring at Finchford. station.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had no violations of Class B(WW) criteria and was assessed as FS.

For 1994 report, also had no violations of Class B(WW) criteria, but assessed as FST due to known threat from agricultural nonpoint sources.

For 1996 report, no violations of Class B(WW) water quality criteria in the 24 samples collected between October 1993 and September 1995. Results of the September 1995 DNR stream use assessment also suggest that the aquatic life uses are fully supported: (1) habitat score (26) is much better than the overall habitat score (22) for DNR stream use assessments, (2) the fish score (13) is better than the 75th percentile score (12) for assessments made with electrofishers, (3) a very diverse fish community is present with 22 species from six families, including three game fish species (northern pike, channel catfish, and smallmouth bass).

For the 1998 report, used results from the DNR monthly monitoring station at Finchford to assess support of the Class B(WW) aquatic life uses as FST: i.e., no violations of toxic or conventional contaminants in the 24 samples collected during the October 95 to September 1997 period (=FS). In addition, continue to use results of the DNR stream use assessment in September 1995 that also suggested full support of the designated aquatic life uses. Although no biological sampling was conducted in this 30-mile Class B(WW) segment, results of the September 1995 DNR stream use assessment upstream from this segment were used as an indication of the biological condition in the upper portion of this reach. A review of the field sheet from this stream use assessment shows that the Class B(WW) aquatic life uses are fully supported due to (1) presence of a very diverse fish community (22 species from 6 families) for streams in the Iowa Surface subcoregion (47c), (2) presence of nearly all the expected fish taxa (10 of 11) for streams in this subregion (with only 1 headwater species (blacknose dace) missing), (3) presence of several game fish species (smallmouth bass, channel catfish, and northern pike), (4) presence of several environmentally sensitive species (e.g., smallmouth bass, blackside darter, and northern hogsucker), and (5) indications of above average habitat quality, with no significant threats to the physical characteristics of this stream reach. In addition, a recent (1997) water quality report ("Summary of Water Quality Monitoring in the Maquoketa River Basin in Iowa" by John Olson, Iowa DNR/EPD) shows that the W.Fk. Cedar R. had some of the best water quality (i.e., low levels of suspended solids and phosphorus) of the six river sites evaluated. ISU fish survs. in Oct. 1982 at Finchford, N of New Hartford, & S of Allison showed diverse fish comms (spp/fam: 12/6; 16/6; 21/5).

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were assessed as "fully supported / threatened. Fish consumption uses remain "not assessed." EXPLANATION: The assessments of support of beneficial uses are based (1) on results of DNR monthly water quality monitoring conducted on the West Fork Cedar River at Finchford during the 1998-1999 biennial period and (2) on results of pesticide monitoring conducted from March 1996 to September 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05458900). Extrapolated results from the September 1995 DNR stream use assessment conducted upstream from this waterbody segment were used for the 1996 and 1998 assessments (see above) but were not used for the 2000 assessment. None of the 26 samples collected during the 1998-1999 biennial period at the DNR monthly station violated Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen; no violations occurred in the two samples analyzed for toxic metals. Although these results suggest "full support" of the Class B(WW) uses, results of the USGS/NAWQA pesticide monitoring suggest that these uses be assessed as "fully supported / threatened." One of 26 samples analyzed for pesticides contained DDE above the Class B(WW) chronic criterion. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), this one violation of a toxic contaminant does not suggest an impairment of the aquatic life uses. Based on DNR's assessment methodology for Section 305(b) reporting, however, this violation suggests that the Class B(WW) aquatic life uses should be assessed as "fully supported / threatened." Support of the fish consumption uses remains "not assessed" due to the lack of recent fish contaminant monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

West Fork Cedar River Subbasin

CEDAR R, W FK

-- Shell Rock R to Hartgraves Cr.

Waterbody ID No.: IA 02-WFC-0020

Subsegment No.: 2

Subsegment Description: Maynes Creek to Hartgraves Creek

Subsegment Length: 34 miles

ASSESSMENT COMMENTS: Assessment is based on results from a September 1995 DNR stream use assessment conducted just upstream from Hartgraves Cr. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1995 DNR stream use assessment near Dumont to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (26) better than the overall median score (22) for stream use assessments, (2) indications on field sheet of moderately diverse substrates, several pool/riffle sequences, and only isolated channel alterations, (3) fish score (13) better than the 75th percentile score (10) for assessments made with seines, and (4) presence of a very diverse fish community (22 species from 6 families).

For the 1998 report, used a review of the field sheet from the October 1995 DNR stream use assessment in Butler County to upgrade the assessment of support of the Class B(WW) aquatic from FST to FS due to (1) presence of a very diverse fish community (22 species from 6 families) for streams in the Iowan Surface subcoregion (47c), (2) presence of nearly all the expected fish taxa (10 of 11) for streams in this subregion, (3) presence of several game fish species (smallmouth bass, channel catfish, and northern pike), (4) presence of several environmentally sensitive species (e.g., smallmouth bass, blackside darter, and northern hogsucker), and (5) indications of above average habitat quality, with no significant threats to the physical characteristics of this stream reach.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Continue to use the assessment of support of the Class B(WW) uses developed for the 1998 report (see above) that was based on results of the September 1995 DNR stream use assessment in Butler County. The results of the September 1995 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions. Fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

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West Fork Cedar River Subbasin

CEDAR R, W FK

-- Hartgraves Cr to Bailey/Bevdam

Waterbody ID No.: IA 02-WFC-0030

Subsegment No.: 0

Subsegment Description: Hartgraves Cr to confl Bailey/Beaverdam

Subsegment Length: 18 miles

ASSESSMENT COMMENTS: Assessment is based on results of a September 1995 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1995 DNR stream use assessment to assess support of the Class B(WW) aquatic life uses as FST due to reasons described to reach from Maynes Creek upstream to Hartgraves Creek.

For the 1998 report, upgraded the assessment of support of the Class B(WW) aquatic life uses from FST to FS. See assessments developed for the downstream waterbody segments of this stream (Waterbody IDs IA 02-WFC-0020-1 and IA 02-WFC-0020-2) for more information. Additional monitoring is needed in this reach to better define the status of the aquatic communities and habitats.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: Continue to use the assessment of support of the Class B(WW) uses developed for the 1998 report (see above). The results of the September 1995 DNR stream use assessment in Butler County-upon which the previous (1998) assessment was based-are approximately 5 years old and thus can be used to assess current water quality conditions. Fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Iowa-Cedar River Basin

West Fork Cedar River Subbasin

MAYNES CR

-- mouth (Butler) to headwaters

Waterbody ID No.: IA 02-WFC-0040

Subsegment No.: 0

Subsegment Description: mouth to trib S22,T91N,R21W Franklin Co.

Subsegment Length: 30 miles

ASSESSMENT COMMENTS: 1992 SUA: habscr/fshscr=24/10 (shock). 1995 Biocriteria: Fish IBI=63 (good), BM-IBI=70 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates fairly good habitat quality despite frequent pasture use along stream channel. A good diversity of substr. and several pool/riffle sequences observed. Good diversity of fish (21 species) observed.

For the 1996 report: Used data from 1995 biocriteria sampling site to make use support determination. Fish and habitat metrics from stream use assessment protocol were applied to the data.

For the 1998 report, used a review of the field sheet from the July 1992 DNR stream use assessment in Franklin County, and results of the July 1995 DNR biocriteria sampling in Franklin County, to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of relatively diverse fish communities (species/families, dstr->upstr: 21/5; 17/5) for streams in the Iowan Surface subcoregion (47c), (2) presence of nearly all of the expected fish taxa (10 of 11; 9 of 11) for streams in this subregion, and (3) indications on the July 1992 field sheet of relatively good habitat quality, with diverse substrates and presence of several pool/riffle sequences. Pasturing of the riparian corridor was identified as the primary impact to this stream.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 63 (good) and the BM-IBI score was 70 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

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West Fork Cedar River Subbasin

BOYLAN CR

-- mouth (Butler) to headwaters

Waterbody ID No.: IA 02-WFC-0050

Subsegment No.: 0

Subsegment Description: mouth to trib S31,T93N,R18W Butler Co.

Subsegment Length: 9.4 miles

ASSESSMENT COMMENTS: Assessment is based on results of an October 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of October 1994 stream use assessment to assess the Class B(LR) aquatic life uses as PS due to habitat score (21) worse than the overall median score (22) for DNR stream use assessments. Field sheet indicates impacts to channel and streambank stability due to pasturing.

For the 1998 report, used a review of the field sheet from the October 1994 DNR stream use assessment in Butler County to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to (1) presence of a moderately diverse fish community (8 species from 2 families) for streams in the Iowan Surface subcoregion (47c), (2) presence of a slight majority of the expected fish taxa (6 of 11) for streams in this subregion, and (3) indications on field sheet of several aspects of good habitat quality, including diverse substrates and occurrence of several pool/riffle sequences. Field sheet indicates that frequent pasturing of the stream corridor and frequent streambank erosion are the primary impacts to the physical characteristics of this stream.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the October 1994 DNR stream use assessment. The results of the October 1994 DNR stream use assessments are approximately 5 years old and can be used to assess current water quality conditions.

HARTGRAVE CR

-- mo-confl of Otter & Spring crs

Waterbody ID No.: IA 02-WFC-0060

Subsegment No.: 0

Subsegment Description: mouth to confl w/ Spring Cr. Franklin Co

Subsegment Length: 11 miles

ASSESSMENT COMMENTS: Assessment is based on results of a November 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the November 1994 DNR stream use assessment to assess support of Class B(LR) aquatic life uses as FST due to (1) habitat score (24) better than the overall median score (22) for DNR stream use assessments, (2) fish score (11) better than the 75th percentile for DNR stream use assessments made with seines. Field sheet indicates only "isolated" channel alterations (pasturing), although frequent streambank instability is indicated. Good diversity of fish species (9) including *H. nigricans*.

For the 1998 report, used a review of the field sheet from the November 1994 DNR stream use assessment in Butler County to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (9 species from 3 families) for streams in the Iowan Surface subcoregion (47c), (2) presence of a majority of the expected fish taxa (7 of 11) for streams in this subregion, and (3) indications on field sheet of good low flow characteristics and presence of diverse substrates with a few pool/riffle sequences present. As noted in the assessment developed for the 1996 report, the primary threat to the physical characteristics of this stream is streambank erosion. Field sheet suggests that this stream was sampled under somewhat high flow conditions; thus, additional monitoring should be conducted to better define the status of the aquatic communities and habitats.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1996 and 1998 reports (see above) that were based on the November 1994 DNR stream use assessment in Franklin County. The results of the October 1994 DNR stream use assessment are approximately 5 years old and can be used to assess current water quality conditions.

Rivers and Streams: Iowa-Cedar River Basin

West Fork Cedar River Subbasin

BAILEY CR

-- mouth (Franklin) to headwaters

Waterbody ID No.: IA 02-WFC-0110

Subsegment No.: 0

Subsegment Description: mo to trib S16,T94N,R22W Cerro Gordo Co.

Subsegment Length: 23 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR/UHL biocriteria sampling on July 22, 1996: Fish-IBI=57 (good); BM-IBI=80 (excellent). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, did not use results of assessment due to lack of information for the approximately 15 miles of Bailey Creek downstream from Interstate 35. The only assessment was conducted in the extensively channelized reaches upstream from I-35; the stream appears well-meandered in the lower reaches.

For the 1998 report, used results of the July 1996 DNR stream biocriteria sampling to assess support of the Class B(LR) aquatic life uses as FS due to (1) exceptionally diverse fish community (21 spp., 5 fams) with nearly all (10 of 11) regionally expected fish taxa present and (2) no violations of Class B(LR) WQ criteria in the sample collected during biocriteria sampling.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 57 (good) and the BM-IBI score was 80 (excellent). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

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Winnebago River Subbasin

WINNEBAGO R

-- mouth to mill dam at Fertile

Waterbody ID No.: IA 02-WIN-0010

Subsegment No.: 1

Subsegment Description: mouth to Calmus Cr. at Mason City

Subsegment Length: 38 miles

ASSESSMENT COMMENTS: Assessment is based on results of two water quality studies conducted by UHL for Lehigh Cement Co.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of two studies conducted by UHL for Lehigh Portland Cement Co. of Mason City in 1994 and 1995 to determine whether the LPCC outfall was affecting WQ or aquatic life in the Winnebago River. Both studies involved sampling for water quality, benthic invertebrates, and fish both upstream and downstream from the LPCC outfall. Results of both studies show no violations of Class B(WW) aquatic life water quality criteria and show relatively diverse communities of benthic macroinvertebrates and fish. Although conducted just upstream from confluence with Calmus Creek, results of these studies were used to assess this lowest subsegment of the Winnebago River.

For the 1998 report, continue to use the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST). The biological information gathered for the 1994 and 1995 UHL studies, however, suggests the need to conduct follow-up monitoring in this reach of the Winnebago River. That is, both the fish community diversity and the number of expected fish taxa from both studies were relatively low. Upstream from the LPCC outfall, the fish community diversity (9 species from 5 families in 1994 and 9 species from 6 families in 1995) was relatively low for given the intensive sampling of a Class B(WW) stream in the Iowan Surface subcoregion (47c). Downstream from the outfall, fish community diversity was somewhat lower, with 5 species from 3 families collected in 1994 and 8 species from 4 families collected in 1995. Again, these numbers are relatively low for Iowan Surface streams. The number of expected fish taxa at both sites in both years (3 of 11) was also low for Iowan Surface streams and suggests a potential water quality impact. Follow-up monitoring is needed to better determine the status of the aquatic communities of this reach of the Winnebago River and to determine whether the Class B(WW) uses may be impaired. Any water quality impacts identified are likely to be limited to the Mason City urban/industrial area.

For the 2000 report: **SUMMARY:** The Class B(WW) aquatic life uses remain assessed as "fully supported / threatened." The fish consumption uses were assessed as "fully supported." **EXPLANATION:** Continue to use the assessment of support of the Class B(WW) uses developed for the 1998 report (see above) that was based on results of water quality studies conducted in 1994 and 1995 by the University of Iowa Hygienic Laboratory for the Lehigh Portland Cement Company. Results from these studies are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment for the 1998 report (above), results of these studies suggest a potential water quality problem; follow-up monitoring is needed to better determine the status of the aquatic communities of this reach of the Winnebago River and to determine whether the Class B(WW) uses may be impaired. Fish consumption were assessed as "fully supported" based on results of EPA/DNR fish tissue monitoring in 1998 on the Winnebago River east of Mason City. This monitoring showed that levels of all contaminants in the composite samples of filets from carp and walleyes were well below 1/2 of the respective FDA action levels and DNR levels of concern.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Winnebago River Subbasin

WINNEBAGO R

-- mouth to mill dam at Fertile

Waterbody ID No.: IA 02-WIN-0010

Subsegment No.: 2

Subsegment Description: Calmus Cr. to mill dam at Fertile

Subsegment Length: 38 miles

ASSESSMENT COMMENTS: Assessment is based on results of two water quality studies conducted by UHL for Lehigh Cement Co. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Monitoring station is located upstream from most of Mason City and is upstream from confluence w/ Calmus Creek, which has had severe WQ problems in the past. Subsegment was not assessed with WQ monitoring data for the 1992 report.

For the 1994 report, had no violations of Class B(WW) WQC; thus assess as FST due to known threats from agricultural nonpoint sources. Based on stream fish surveys at two locations in the 1980s, habitat is above average, and reach supports smallmouth bass.

For the 1996 report, used assessment of support of the Class B(WW) aquatic life uses developed for the 1994 report (=FST) along with results of two stream studies conducted by UHL for the Lehigh Portland Cement Company in 1994 and 1995 to assess support of these uses as FST. Results of Lehigh's 1994 and 1995 studies indicate that the river is not violating water quality criteria for Class B(WW) waters and that both benthic macroinvertebrate and fish populations suggest good water quality.

For the 1998 report, see assessment developed for the downstream waterbody subsegment of the Winnebago River (IA 02-WIN-0010-1). Follow-up monitoring is needed to determine the status of the aquatic communities of this reach of the Winnebago River. Any impacts are likely located in the vicinity of the Mason City urban/industrial area.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported / threatened." The fish consumption uses remain "not assessed." EXPLANATION: The DNR quarterly water quality monitoring station at Mason City was last monitored from October 1991 to September 1993. Results from this monitoring are now considered too old (greater than five years) for assessing current water quality conditions. As part of DNR's expanded water quality monitoring program, however, monthly monitoring at the Mason City station began in October 1999. Results from this monitoring will allow development of an updated assessment of support of beneficial uses for the 2002 report. Thus, for the 2000 report, continue to use the assessment of support of the Class B(WW) uses developed for the 1998 report (see above). This assessment was based on results of water quality studies conducted in 1994 and 1995 by the University of Iowa Hygienic Laboratory for the Lehigh Portland Cement Company. Results from these studies are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment for the 1998 report (above), results of these studies suggest a potential water quality problem; follow-up monitoring is needed to better determine the status of the aquatic communities of this reach of the Winnebago River and to determine whether the Class B(WW) uses may be impaired. Fish consumption remained "not assessed" due to a lack of recent fish tissue monitoring in this river reach.

Rivers and Streams: Iowa-Cedar River Basin

Winnebago River Subbasin

WINNEBAGO R

-- up end Fertile Pond-IA/MN line

Waterbody ID No.: IA 02-WIN-0020

Subsegment No.: 1

Subsegment Description: up end Fertile Pond to confl w/Pike Run

Subsegment Length: 47 miles

ASSESSMENT COMMENTS: Assessment is based on results of a September 1995 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 report.

For the 1998 report, used a review of the field sheet from the September 1995 DNR stream use assessment in Hancock County to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of a majority of the expected fish taxa (4 of 11) for low gradient streams in the Des Moines Lobe subcoregion and (2) indications on field sheet of relatively good quality aquatic habitat. Two game fish species were present: channel catfish (YOY) and northern pike.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: Continue to use the assessment of support of the Class B(WW) uses developed for the 1998 report (see above). The results of the September 1995 DNR stream use assessment in Hancock County-upon which the previous (1998) assessment was based-are approximately 5 years old and thus can be used to assess current water quality conditions. Fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Iowa-Cedar River Basin

Winnebago River Subbasin

WINNEBAGO R

-- up end Fertile Pond-IA/MN line

Waterbody ID No.: IA 02-WIN-0020

Subsegment No.: 2

Subsegment Description: Pike Run to IA/MN line

Subsegment Length: 47 miles

ASSESSMENT COMMENTS: Habscrs/fshscrs: 1995 biocriteria=24/11 (shock); 1995 SUA: 24/11 (shock). 1995 Biocriteria: Fish IBI=37 (fair), BM-IBI=65 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Used data from one biocriteria sampling site to make determination of use support status. Fish and habitat metrics from the stream use assessment protocol were applied to the data to make the determination. Numbers of fish observed was fairly low, but diversity was reasonably good. Habitat was fairly-good for a low gradient stream in northcentral Iowa. Two Iowa Darter specimens were included in fish collection. Many juvenile north. pike also observed. Results of the three DNR stream use assessments conducted in this segment also suggest that the Class B(LR) aquatic life uses are FST due to (1) habitat scores for 2 of 3 sites of 24 which is better than the overall median score (22) for DNR stream use assessments, (2) only moderately diverse fish communities (10 species) but low percentage of pollution tolerant species (30% and 40%).

For the 1998 report, used a review of the September 1995 DNR stream use assessment, and results of the August 1995 DNR biocriteria sampling (both in Winnebago County) to continue to assess support of the Class B(LR) aquatic life use as FST due to (1) presence of a relatively diverse fish community (17 species from 7 families (biocriteria sampling)), (2) presence of a majority of the expected fish taxa for low gradient streams of north central Iowa, and (3) indications of above average habitat quality at both assessment sites, with a well-meandered channel form. Frequent streambank erosion was noted as a impact to the physical characteristics of the stream at the DNR stream use assessment site.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 37 (fair) and the BM-IBI score was 65 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Iowa-Cedar River Basin

Winnebago River Subbasin

WILLOW CR

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 02-WIN-0073

Subsegment No.: 0

Subsegment Description: mouth (SW 1/4, S32, T98N, R21W, Worth Co.) to headwaters

Subsegment Length: 10 miles

ASSESSMENT COMMENTS: 1995 Biocriteria: Fish IBI=50 (good), BM-IBI=81 (excellent).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

2000 report: The assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 50 (good), and the BM-IBI score was 81 (excellent). The aquatic life use support status was assessed as fully supporting/threatened (=FS/T), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Skunk River Basin

North Skunk River Subbasin

N SKUNK R

-- MiddleCr-Mahaska--SugarCr-Powe

Waterbody ID No.: IA 03-NSK-0020

Subsegment No.: 1

Subsegment Description: Middle Cr to Mahaksa/Poweshiek co line

Subsegment Length: 34 miles

ASSESSMENT COMMENTS: 1996 biocriteria: fish, 22 spp., 4 fams.; Fish IBI= 36(fair), BM-IBI= 53(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 report.

For the 1998 report, used results of the DNR biocriteria sampling in October 1996 to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a relatively diverse fish community of 22 species from 4 families, (2) presence a majority of the expected fish taxa (6 of 8) for streams in the portion of the Southern Iowa Rolling Loess Prairies subcoregion that drains to the Mississippi River, and (3) lack of violations of Class B(LR) WQ criteria in the sample collected during biocriteria sampling. Missing fish taxa were stream-dwelling centrarchids and darter spp.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 36 (fair) and the BM-IBI score was 53 (fair). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Skunk River Basin

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North Skunk River Subbasin

N SKUNK R

-- MiddleCr-Mahaska--SugarCr-Powe

Waterbody ID No.: IA 03-NSK-0020

Subsegment No.: 2

Subsegment Description: Mahaska/Poweshiek line to Sugar Cr-Poweshiek Co.

Subsegment Length: 34 miles

ASSESSMENT COMMENTS: Assessment is based on results of a November 1994 DNR stream use assessment in Poweshiek Co. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the November 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as PS due to (1) habitat score (20) worse than the overall median score (22) for DNR stream use assessments and (2) indications on field sheet of little diversity of substrates, no pool/riffle development, extensive channel alterations due to channel straightening and pasturing of riparian area. Relatively low number of fish species captured (6) with most turbidity-tolerant cyprinids.

For the 1998 report, used a review of the field sheet from the November 1994 DNR stream use assessment in Poweshiek County to continue to assess support of the Class B(LR) aquatic life uses as PS due to (1) a fish community with relatively low diversity (6 species from 2 families) for streams in the Mississippi River portion of the Southern Iowa Rolling Loess Prairies subcoregion, (2) presence of less than a majority of the expected fish taxa (3 of 8) for streams in this subregion, and (3) indications of below average aquatic habitats (see above assessment developed for the 1996 report). Relatively poor results for sampling of the fish community may be partially due to the late season (November) sampling. Follow-up monitoring is needed to better determine the status of the aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1998 report (see above). Follow-up monitoring is still needed to better determine the status of the aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Skunk River Basin

North Skunk River Subbasin

ROCK CR

-- mouth-Keokuk to headwaters

Waterbody ID No.: IA 03-NSK-0037

Subsegment No.: 0

Subsegment Description: mouth to trib S34,T76N,R21 W Keokuk Co.

Subsegment Length: 3.3 miles

ASSESSMENT COMMENTS: Assessment is based on results of a July 1994 DNR stream use assessment in Keokuk County. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report. Stream was not designated for Class B(LR) aquatic life uses until June 1995.

For 1996 report, used results of the July 1994 DNR stream use assessments to assess support of the Class B(LR) aquatic life uses as PS due to (1) habitat score (18) worse than the overall median score (22) for DNR stream use assessments and (2) indications on field sheet of little substrate diversity, few pools and/or riffles, frequent channel alterations, and very unstable and eroding stream banks. Fish score was relatively high as was the number of species (12) for a North Skunk River tributary.

For the 1998 report, used a review of the field sheet from the July 1994 DNR stream use assessment to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to (1) presence of a moderately diverse fish community (12 species from 4 families) for streams in the Mississippi River portion of the Southern Iowa Rolling Loess Prairies subcoregion (47f) and (2) presence of nearly all the expected fish taxa (7 of 8) for streams in this subregion. Field sheet indicates below average habitat quality (see above assessment developed for the 1996 report), and threats to the continued support of the Class B(LR) uses include extensive streambank erosion and frequent areas of channel alterations. As noted on the field sheet, numerous snags hindered seining; additional monitoring would be useful for better defining the status of the aquatic communities of this stream.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1998 report (see above).

BUCK CR

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 03-NSK-0042

Subsegment No.: 0

Subsegment Description: mouth (SE 1/4, S16, T77N, R15W, Mahaska Co.) to confluence with

Subsegment Length: 10 miles

ASSESSMENT COMMENTS: 1994 Biocriteria: Fish IBI= 30 (fair), BM-IBI= 67 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports.

2000 report: The assessment was based on data collected in 1994 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 30 (fair), and the BM-IBI score was 67 (good). The aquatic life use support status was assessed as fully supporting/threatened (=FS/T), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Skunk River Basin

*Mississippi River and Direct Tributaries***MISSISSIPPI R**

-- IA/MO line to Skunk R.

Waterbody ID No.: IA 03-SKM-0010

Subsegment No.: 1

Subsegment Description: IA/MO line to outfall of Ft Madison WWTP

Subsegment Length: 37 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) USGS/Illinois water quality monitoring near Keokuk and (2) fish tissue (RAFT) monitoring at Keokuk in 1996. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Partial
Drinking Water Supply	-- Threatened		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had chlordane in fish > 1/2 FDA action level; 2 of 3 samples > WQC for fecal coliforms (eval as PS) and attrib fecals to Ft Madison and Keokuk WWTPs. Class B WQC for Cu exceeded in 1 of 11 samples.

For 1994 report, had no violations of any WQC (Class A, B, or C); problems with high levels of chlordane in fish no longer exist. Assessment as NS comes from info from UMRCC meeting and UMRBA toxics workshop in Feb 1993 that shows aquatic life of Pool 19, (especially fingernail clams) have been decimated by some form of toxicity (probably, but not definitively, ammonia toxicity). This toxicity has tentatively been attributed to the industrial, municipal, and agricultural overloading of the river. Pool 19 is known as one of the major WQ problem areas on the UMR. Support of Class C use, as shown by USGS research, is threat by ag. pests

For 1996 report, concerns with aquatic life in Pool 19 continue. Monthly monitoring conducted at Keokuk by the Illinois EPA from October 1992 through September 1995 (32 samples) showed 2 viols. of Class B and C pH criteria (10 and 9.4, both in January 1994), 2 violations of Class B chronic WQC for NH₃ in Mar93 & Jan94, 1 viol of Class B chronic WQC each for CN (Jul95) and Hg (Jun94). Based on 305(b) guidelines, the two violations of the chronic WQC for ammonia suggest impairment; thus assess support of the B(WW) aquatic life uses as NS. Comparison of data to Class C WQC suggest no impairment. Comparison of data for fecal coliform bacteria from the Illinois EPA station show 5 of 8 summer season samples/normal flow values > WQC of 200 orgs/100 ml; based on DNR guidelines, support of Class A uses assessed as PS. No known problems with fish tissue contamination. 9 CSOs in Fort Madison.

For the 1998 report, used historical information on impacts to aquatic life in Pool 19 and used results of WQ monitoring by the Illinois EPA at Keokuk to assess support of Class A primary contact uses as PS, Class B(WW) aquatic life uses as PS, and Class C drinking water uses as FST. The geometric mean of fecal coliform bacteria in the 5 non-flow affected samples collected during summers of 1996-97 (144) is < than the Iowa WQ criterion (200 orgs/100 ml), but > than 10% of samples exceeded 400 orgs/ 100 ml (=PS). Class B(WW) WQ criteria for chromium & cyanide were each exceeded in 1 of 27 samples coll. over a 3-year period ending in Sept. 1997. Based on USEPA guidelines for Sec. 305(b) reporting, these viols do not suggest a WQ impariment. One of 27 exceeded the Class C WQ criterion for copper; no impairment. Fish contams in 1996 carp & FW drum fillet samples all were <1/2 of the respective FDA action levels (=FS).

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remained assessed as "partially supported." The Class B(WW) aquatic life uses were "not assessed." The Class C (drinking water) uses remain assessed as "fully supported / threatened." The fish consumption uses were assessed as "fully supported." EXPLANATION: Continue to use the assessments of support of the Class A and Class C uses developed for the 1998 report (see above). The support of the Class B(WW) aquatic life uses was changed from "partially supported" to "not assessed" due to lack of recent information on the impairment of aquatic life that served as the basis for previous Section 305(b) assessments. That is, the previous assessments of impairment were based on information (primarily in Sparks 1984) that suggested dramatic declines of fingernail clams in Pool 19. These data are now considered too old for determining current water quality conditions. In addition, more recent information (see Sauer and Lubinski 1999) suggests that populations of fingernail clams in Pool 19 fluctuate considerably from year to year and that the relationship between the observed fluctuations in macroinvertebrate densities and water quality in the UMR is difficult to define. Fish consumption uses were assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring (1) in 1996 in Pool 19 at Keokuk and (2) in 1998 in Pool 20 downriver from Lock and Dam 19 at Keokuk. Levels of all contaminants in the composite samples of fillets from carp and freshwater drum (1996) and from channel catfish and white bass (1998) were less than 1/2 of the respective FDA action levels and DNR levels of concern.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Skunk River Basin

Lower Skunk River Subbasin

SKUNK R

-- mouth to Oakland Mills Dam

Waterbody ID No.: IA 03-SKU-0010

Subsegment No.: 1

Subsegment Description: mouth to Big Cr at Mt Pleasant, Henry Co

Subsegment Length: 37 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) USGS/NAWQA monitoring (fish tissue and water) at August from 1995 to 1998 and (2) fish tissue (RAFT) monitoring in 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, only violation of WQC was 1 of 2 samples analyzed for Hg (data for Hg not used due to analytical problems) Based on monitoring data, assessed as FST; NPS assessment indicated PS.

For 1994 report, has same violation of Class B WQC for Hg, but had no other violations. Assessed as FST due to known threats from agricultural nonpoint sources.

For 1996 report, had no violations from USGS monitoring station at Augusta for water years 1993 and 1994. All contaminants in sample of whole-fish carp collected for the 1995 RAFT program less than 1/2 the FDA action level. Thus, assess support of the Class B(WW) uses as FST due to known threats from agricultural activities.

For the 1998 report, continued to use assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report. The USGS NASQAN station near Wever was discontinued after the 1995 water year. Also use assessment of support of fish consumption uses developed for the 1996 report (=FS). RAFT (fish tissue) trend sampling was again conducted in 1997; results from this sampling are not yet available.* This site was also sampled for fish contaminants in September 1995 as part of the USGS National Water Quality Assessment (NAWQA) program. The composite sample of whole-fish carp was analyzed for several organochlorine contaminants, including chlordane, dieldrin, DDT, and PCBs. Levels of all these contaminants were well below 1/2 the FDA action level. These results are consistent with results of similar monitoring conducted in 1995 for the RAFT program, and the USGS results support the assessment fish consumption uses as fully supported (FS). For more information on the USGS fish tissue study, see USGS Fact Sheet FS-027-97 (March 1997). *Results of the 1997 RAFT fish contaminant program were received in August 1998. Similar to other recent monitoring at this location, the levels of all contaminants in the composite sample of whole-fish carp were less than 1/2 of the respective FDA action levels. Thus, continue to assess support of the fish consumption uses as FS.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses are assessed as "partially supported;" the fish consumption uses are assessed as "fully supported / threatened." EXPLANATION: The assessment of support of the Class B(WW) uses is based on results of monitoring conducted on the Skunk River at Augusta from March 1996 to September 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05474000). This monitoring showed (1) no violations of Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen in the 34 samples collected, (2) a single violation of the Class B(WW) chronic water quality criterion for chlorpyrifos in the 21 samples analyzed, and (3) two violations of the Class B(WW) chronic water quality criterion for dieldrin (0.0019 ug/l) in the 21 samples analyzed. The violations of dieldrin occurred on June 12, 1996 (0.004 ug/l) and on May 26, 1998 (0.0058 ug/l). Although the results for pH, dissolved oxygen, and ammonia-nitrogen suggest full support of the aquatic life uses, the results of pesticide monitoring (dieldrin) indicate only partial support of these uses. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), the one violation of the chronic criterion for chlorpyrifos does not suggest an impairment of the aquatic life uses. The EPA guidelines, however, specify that more than one violation of a water quality criterion for a toxic contaminant within a three-year period indicates that the aquatic life uses are not fully supported. Thus, according to the U.S. EPA guidelines, the two violations of the chronic criterion for dieldrin (9.5 % violation) indicate "partial support" of the Class B(WW) uses. Fish consumption uses remain assessed as "fully supported / threatened" based on results of (1) the USGS/NAWQA fish tissue monitoring in September 1995 that showed levels of organochlorine contaminants were less than 1/2 of the respective FDA action levels and DNR levels of concern (see assessment for the 1998 report above) and (2) EPA/DNR fish tissue monitoring near Wever in 1999 that showed levels of all contaminants in the composite samples of whole-fish carp were less than 1/2 of the respective FDA action levels. The level of lead in this sample (2.10 mg/kg), however, is twice the DNR level of concern of 1.0 mg/kg and is well above typical lead concentrations in Iowa fish. An FDA action level does not exist for lead, and U.S. EPA does not include lead in its list of target analytes for screening studies in fish and shellfish (see page 4-2 of U.S. EPA's "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories," document EPA 823-R-93-002, August 1993). Due to this unusually high level of lead, however, the fish consumption uses were assessed as "fully supporting / threatened."

Rivers and Streams: Skunk River Basin

Lower Skunk River Subbasin

SKUNK R

-- Oak Mills Imp to N & S Skunk

Waterbody ID No.: IA 03-SKU-0030

Subsegment No.: 2

Subsegment Description: N line S3,T71N,R7W Henry to confluence of N & S Skunk rivers (Keo

Subsegment Length: 55 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring near Brighton in 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Not assessed

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 report.

For the 1998 report, used results of fish tissue sampling conducted for the 1997 DNR/U.S. EPA "RAFT" program to assess support of the fish consumption uses as FS due to levels of all contaminants below 1/2 the respective FDA action levels in composite samples of filets from carp and freshwater drum. No other information is available for developing assessments of the Class B(WW) aquatic life uses.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain "not assessed." The fish consumption uses remain "fully supported." EXPLANATION: Due to the lack of data from either chemical or biological monitoring for this river reach, the Class B(WW) uses remained "not assessed." Fish consumption uses remained assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring near Brighton in 1997 (see assessment developed for the 1998 report above).

HEATHER BRANCH

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 03-SKU-0084

Subsegment No.: 0

Subsegment Description: mouth (NE 1/4, S28, T71N, R6W, Henry Co.) to headwaters

Subsegment Length: 4 miles

ASSESSMENT COMMENTS: 1998 Biocriteria: Fish IBI= 58 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports.

2000 report: The assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

For this particular stream segment, only fish data were collected and analyzed. The F-IBI score was 58 (good). The aquatic life use support status was assessed as fully supporting (=FS), based on a comparison of the F-IBI with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Skunk River Basin

Lower Skunk River Subbasin

SAUNDERS BRANCH

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 03-SKU-0085

Subsegment No.: 0

Subsegment Description: mouth (SW 1/4, S17, T71N, R6W, Henry Co.) to headwaters

Subsegment Length: 2 miles

ASSESSMENT COMMENTS: 1998 Biocriteria: Fish IBI (4 sites upstream to downstream) = 6(very poor), 5(very poor), 34(fair), 18(poor)

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting

Aquatic Life Support -- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports.

2000 report: The assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

For this particular stream segment, only fish data were quantitatively analyzed while benthic macroinvertebrate data were analyzed qualitatively. The Fish IBI score (4 sites upstream to downstream) = 6(very poor), 5(very poor), 34(fair), 18(poor). The aquatic life use support status was assessed as not supporting (=NS), based on a comparison of the F-IBI with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Skunk River Basin

Lower Skunk River Subbasin**CEDAR CR**

-- mouth (Henry) to Compentine Cr

Waterbody ID No.: IA 03-SKU-0090

Subsegment No.: 1

Subsegment Description: mo to L Cedar Cr S17,T70N,R7W Henry Co.

Subsegment Length: 52 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) DNR monthly water quality monitoring near Oakland Mills and (2) USGS/NAWQA pesticide monitoring (water & fish tissue) near Oakland Mills. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
 Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Stream assess. form indicates well-above average habitat quality. Good flow and depth should support a diversity and abundance of fish. Fairly good diversity of fish observed but numbers of fish were somewhat low. Possible explanations include sampling error, seasonal movements of fish, water quality impact. Low numbers of fish also observed at three other locations in the Class B(LR) segment. For 1992 report, had no violations of Class B WQC; thus assessed as FST. For 1994 report, also had no violations, and assessed this reach as FST.

For 1996 report, used results from DNR fixed station water quality monitoring, and results from the October 1990 DNR stream use assessment WSW of Oakland Mills to assess support of the Class B(WW) uses as FST due to (1) habitat score (32) far better than the overall median score (22) for DNR stream use assessments (high score primarily due to above average low flow characteristics of this relatively large stream) and (2) indications on field sheet of very diverse substrates, several pool/riffle sequences, only isolated channel alterations, and moderately stable stream banks. Threats to continued support of aquatic life uses include agricultural nonpoint source runoff and alterations to stream channels in headwater reaches.

For the 1998 report, had no violations of Class B(WW) WQ criteria for either conventional or toxic pollutants in the 24 samples collected during the October 1995 to September 1997 period. Thus, based on results of previous (1990) bioassessments and the lack of violations of WQ criteria, assess support of the Class B(WW) aquatic life uses as FST. Used results of fish tissue monitoring conducted for the USGS National Water Quality Assessment (NAWQA) program in September 1995 to develop an assessment of support of fish consumption uses. The composite sample of whole-fish carp was analyzed for several organochlorine compounds, including chlordane, dieldrin, DDT, and PCBs. Levels of all contaminants were much less than 1/2 of the respective FDA action levels, and levels of contaminants at this site were near the lowest of any of the 16 locations sampled for this study. Thus, assess support of the fish consumption use as fully supporting (FS). For more information on the USGS fish tissue study, see USGS Fact Sheet FS-027-97 (March 1997). A review of the field sheet from the October 1990 DNR stream use assessment shows a moderately diverse fish community of 11 species from 7 families, presence of a majority of the expected fish taxa (6 of 8) for streams in the Central Irregular Plains ecoregion (40), and presence of the expected game fish species (channel catfish). Three size groups of channel catfish were collected: 9-10" TL; 4-5" TL, and 2-3" TL. This review supports the FST use assessment. No threats identified on sheet.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were assessed as "fully supported / threatened. Fish consumption uses remain "fully supported." EXPLANATION: The assessment of support of the Class B(WW) uses is based (1) on results of DNR monthly water quality monitoring conducted on Cedar Creek near Oakland Mills during the 1998-1999 biennial period and (2) on results of pesticide monitoring conducted from April 1996 to August 1998 by USGS as part of the National Water Quality Assessment Program (NAWQA) (eastern Iowa river basins study unit, station 05473400). None of the 24 samples collected during the 1998-1999 biennial period at the DNR monthly station violated Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen; no violations occurred in the two samples analyzed for toxic metals. Although these results suggest "full support" of the Class B(WW) uses, results of the USGS/NAWQA pesticide monitoring suggest that these uses be assessed as "fully supported / threatened." One of 29 samples analyzed for pesticides contained chlorpyrifos above the Class B(WW) chronic criterion of 0.041 ug/l). This sample was collected on June 17, 1996, and contained 0.0446 ug/l of chlorpyrifos). According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), this one violation of a toxic contaminant does not suggest an impairment of the aquatic life uses. Based on DNR's assessment methodology for Section 305(b) reporting, however, this violation suggests that the Class B(WW) aquatic life uses should be assessed as "fully supported/threatened." Support of the fish consumption uses remains "fully supported" based on results from USGS/NAWQA fish tissue monitoring near Oakland Mills in September 1995 that showed very low levels of organochlorine contaminants (see assessment developed for the 1998 report above).

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Rivers and Streams: Skunk River Basin

South Skunk River Subbasin

S SKUNK R

-- mo-Keokuk to Indian Cr-Jasper

Waterbody ID No.: IA 03-SSK-0010

Subsegment No.: 2

Subsegment Description: Hwy 21 (Keokuk) to Hwy 63 N of Oskaloosa

Subsegment Length: 92 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue monitoring near Oskaloosa by (1) USGS/NAWQA in 1995 and (2) EPA/DNR (RAFT) in 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results from the DNR quarterly water quality monitoring station at the Hwy 63 bridge N of Oskaloosa, and information from Harlan et al. (1987: 10) to assess support of the Class B(WW) aquatic life uses as PS due to impacts of extensive channelization. Results of two years of quarterly monitoring showed no violations of Class B(WW) water quality criteria. Extensive channelization, however, has degraded aquatic habitat. According to Harlan et al., good fishing occurs in this reach of the S. Skunk, but the lack of habitat diversity makes water levels crucial to fishing success.

For the 1998 report, changed the assessment of support of the Class B(WW) aquatic life uses from PS to FST due to lack of violations of Class B(WW) WQ criteria in quarterly WQ monitoring conducted N of Oskaloosa. Used results of USGS fish tissue monitoring conducted for the National Water Quality Assessment (NAWQA) program in September 1995 to develop an assessment of support of fish consumption uses. The composite sample of whole-fish carp was analyzed for several organochlorine compounds, including chlordane, dieldrin, DDT, and PCBs. Levels of all these contaminants were well below 1/2 the respective FDA action levels, thus suggesting full support (FS) of fish consumption uses. For more information on the USGS fish tissue study, see USGS Fact Sheet FS-027-97 (March 1997). The assessment of the Class B(WW) aquatic life uses was developed without information on the aquatic communities of this waterbody subsegment. Additional monitoring is needed to provide the information on aquatic communities and habitats necessary to develop a more accurate assessment of the degree to which this waterbody supports its Class B(WW) uses.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were "not assessed." The fish consumption uses remain assessed as "fully supported." EXPLANATION: The previous assessment of support of the Class B(WW) uses was based on results from the DNR quarterly monitoring station near Oskaloosa (station 821035). This station was last monitored from October 1993 through September 1995, and data from this monitoring period are now considered too old (greater than five years) for characterizing current water quality conditions. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Oskaloosa station began in October 1999. Results from this monitoring will allow development of an updated assessment of support of beneficial uses for the 2002 report. Fish consumption uses remained assessed as "fully supported" based on (1) results of USGS/NAWQA fish tissue monitoring near Oskaloosa in September 1995 that showed low levels of organochlorine contaminants (see assessment developed for the 1998 report above) and (2) results of EPA/DNR fish tissue (RAFT) monitoring in 1999 near Oskaloosa that showed levels of all contaminants in the composite sample of filets from common carp were less than 1/2 of the respective FDA action levels and DNR levels of concern.

Rivers and Streams: Skunk River Basin

*South Skunk River Subbasin***S SKUNK R**

-- mo-Keokuk to Indian Cr-Jasper

Waterbody ID No.: IA 03-SSK-0010

Subsegment No.: 3

Subsegment Description: Hwy 63 at Oskaloosa to Elk Cr, Mahaska Co.

Subsegment Length: 92 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue monitoring near Oskaloosa by (1) USGS/NAWQA in 1995 and EPA/DNR (RAFT) in 1999. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Fully	Drinking Water Supply	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results from the DNR quarterly water quality monitoring station at the Hwy 63 bridge N of Oskaloosa, and information from Harlan et al. (1987: 10) to assess support of the Class B(WW) aquatic life uses as PS and the Class C drinking water uses as FS. Although results of two years of quarterly monitoring show no violations of either Class B(WW) or Class C water quality criteria, information from Harlan et al. (1987) suggest that extensive channelization has degraded the quality of the aquatic habitat such that fishing success depends on favorable water conditions. Thus, assess support of the Class B(WW) aquatic life uses as PS due to impacts of extensive channelization and the Class C drinking water uses as FS due to no violations of Class C water quality criteria for nitrate and toxic metals (no pesticide monitoring conducted).

For the 1998 report, changed the assessment of support of the Class B(WW) aquatic life uses from PS to FST due to lack of violations of Class B(WW) WQ criteria in two years (1994-95) of quarterly WQ monitoring conducted N of Oskaloosa. Used results of USGS fish tissue monitoring conducted for the National Water Quality Assessment (NAWQA) program in September 1995 to develop an assessment of support of fish consumption uses. The composite sample of whole-fish carp was analyzed for several organochlorine compounds, including chlordane, dieldrin, DDT, and PCBs. Levels of all these contaminants were well below 1/2 the respective FDA action levels, thus suggesting full support (FS) of the fish consumption uses. For more information on the USGS fish tissue study, see USGS Fact Sheet FS-027-97 (March 1997). Continue to assess support of the Class C drinking water uses as FS based on lack of violations of Class C WQ criteria during quarterly monitoring north of Oskaloosa during FFY 1994 and 1995. The assessment of support of the Class B(WW) uses was developed without the benefit of information on the status of the aquatic communities of this reach of the South Skunk River. In addition, the assessment of support of the Class C uses was developed without information on levels of agricultural pesticides in the river. Additional monitoring is needed to provide the information on aquatic communities and on levels of pesticides that is needed to develop more accurate assessments of support of the Class B(WW) and Class C uses.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses and Class C (drinking water) uses were "not assessed." The fish consumption uses remain assessed as "fully supported." EXPLANATION: The previous assessments of support of the Class B(WW) and Class C uses were based on results from the DNR quarterly monitoring station near Oskaloosa (station 821035). This station was last monitored from October 1993 through September 1995, and data from this monitoring period are now considered too old (greater than five years) for characterizing current water quality conditions. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Oskaloosa station began in October 1999. Results from this monitoring will allow development of an updated assessment of support of beneficial uses for the 2002 report. Fish consumption uses remained assessed as "fully supported" based on (1) results of USGS/NAWQA fish tissue monitoring near Oskaloosa in September 1995 that showed low levels of organochlorine contaminants (see assessment developed for the 1998 report above) and (2) results of EPA/DNR fish tissue (RAFT) monitoring in 1999 near Oskaloosa that showed levels of all contaminants in the composite sample of filets from common carp were less than 1/4 of the respective FDA action levels and DNR levels of concern.

Rivers and Streams: Skunk River Basin

*South Skunk River Subbasin***S SKUNK R**

-- Indian Creek (Jasper Co.) to Squaw Creek (Story Co.)

Waterbody ID No.: IA 03-SSK-0020

Subsegment No.: 1

Subsegment Description: Indian Creek (Jasper Co.) to outfall of Ames WWTP

Subsegment Length: 35 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR monthly water quality monitoring NNW of Cambridge downstream from outfall of Ames WWTF. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, only violations of WQC was for cyanide; presumed source as industry in Ames. Aquatic life use assessed as FST (but this assessment did not include NPS impacts).

For 1994 report, had no violations of Class B(LR) criteria. However, based on my (JRO) August 1991 walk in the river from Cambridge to Ames, the following impacts were identified: habitat alterations caused by channelization of this reach are evident at most locations. Contributions from agriculture and bank erosion have caused siltation problems which are most severe where trees have been removed from one or both sides of the river (habitat at low flow in these areas is essentially worthless); where trees remain on both sides of the river, habitat quality improves considerably, probably to FST status.

For the 1996 report, used results of DNR monthly water quality monitoring near Cambridge, information from personal knowledge of this reach of river, and information from Harlan et al. (1987: 10) to assess support of the Class B(LR) aquatic life uses as PS due to impacts of extensive channelization. Although results of water quality monitoring show no violations of Class B(LR) water quality criteria over the two years of monthly monitoring, the degradation of aquatic habitat related to extensive channelization suggests that the Class B(LR) aquatic life uses are partially supported (PS). See comments on assessment for the 1994 report and comments in Harlan et al. (1987: 10).

For the 1998 report, despite the lack of violations of Class B(LR) WQ criteria in monthly samples collected between Oct 1995 and Sept. 1997, continue to assess support of the Class B(LR) aquatic life uses as PS due to alterations to the aquatic habitat that have resulted from channelization and removal or riparian vegetation. The information upon which this assessment is based is more than 5 years old. Follow-up monitoring is needed to update this assessment and to better determine the status of the aquatic communities and habitats of this river reach.

For the 2000 report: SUMMARY: Assessed support of the Class B(LR) aquatic life uses as "fully supported / threatened." EXPLANATION: The assessment of support of the Class B(LR) uses was based on results of monthly water quality monitoring during the 1998-1999 biennial period at the DNR station on the South Skunk River near Cambridge (station 390566); this station is located approximately 1/3 mile downstream from the outfall of the Ames wastewater treatment plant. Results of this monitoring show no violations of Class B(WW) criteria for pH, dissolved oxygen, or ammonia nitrogen in the 22 samples analyzed during the biennial period; no violations of Class B(WW) chronic criteria for toxic metals occurred in the two samples analyzed during the biennial period. Thus, the Class B(WW) aquatic life uses were assessed as "fully supported." Although not designated for Class C (drinking water) uses, this river reach tends to have high levels of nitrate, with levels in 9 of the 22 samples collected during the biennial period (41%) exceeding the 10 mg/l MCL (mean=9.8 mg/l; max.=17.0 mg/l; SE=0.9). The results of the DNR stream habitat assessment conducted in August 1991-upon which the previous assessment of the Class B(LR) uses was primarily based ("partially supported," see above)-are now considered too old (greater than five years) to be useful for assessing current water quality conditions. Thus, the assessment for the 2000 report was changed from "partially supporting" to "fully supporting" based only on results of the chemical water quality monitoring at the DNR monthly station during the 1998-1999 biennial period. Follow-up monitoring is needed to determine the status of aquatic habitat and aquatic communities in this river reach.

Rivers and Streams: Skunk River Basin

*South Skunk River Subbasin***S SKUNK R**

-- Squaw Creek to headwaters

Waterbody ID No.: IA 03-SSK-0030

Subsegment No.: 1

Subsegment Description: Squaw Creek to Ames water works dam

Subsegment Length: 52 miles

ASSESSMENT COMMENTS: 1990 SUAs: habscrs/fshscrs=28/12, 30/13, 29/12 (shock); 1997 3 Biocriteria sites: Fish IBI=56,51,50 (good), BM-IBI=81,71,70 (excellent-good).SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. forms indicate well above average habitat quality for B(LR) stream. Stream was assessed at 3 locations upstr. from Squaw Creek where it is more meandering compared to downstream where it is extensively straightened. Very diverse fish community observed including species not typical of lotic habitat (e.g., g. shad, bluegill, l.m. bass). Flow instability and urban runoff are potential threats to aquatic community integrity. Downstream from Ames STP, extensive channelization has substantially reduced habitat quality.

For the 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST).

For the 1998 report, used results of three DNR watershed bioassessments at Ames in Sept. & Oct. 1998 (upstr. Squaw Cr, upstr. Lincolnway, & at River Valley Park) to update the the assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST). Results of the three 1997 bioassessments indicate full support of the Class B(LR) aquatic life uses due to (1) relatively diverse to very diverse fish communities at the three sites, with from 18 to 27 species from 5 families reported, including smallmouth bass, (2) presence of nearly all the expected fish taxa (10 of 11, 9 of 11, and 10 of 11) for streams in the Des Moines Lobe subcoregion, and (3) lack of violations of Class B(LR) WQ criteria in the samples collected during the bioassessments. Despite indications of full support of aquatic life uses, this reach of the South Skunk River is prone to low flow, or no flow, periods due to the naturally-occurring hydrograph of the upper South Skunk River basin. Although water quality impacts from urban runoff are a concern, the relatively high quality of the aquatic community (i.e., fish) as shown by the three 1997 bioassessments does not indicate any such impacts.

For the 2000 report, the assessment was based on data collected from three locations on this river reach in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

Fish-IBI scores were 56, 51, and 50 (good); the BM-IBI scores were 81, 71, and 70 (excellent-good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Skunk River Basin

South Skunk River Subbasin

S SKUNK R

-- Squaw Creek to headwaters

Waterbody ID No.: IA 03-SSK-0030

Subsegment No.: 2

Subsegment Description: Ames WW dam->N line S6,T85,R23W,Story Co

Subsegment Length: 52 miles

ASSESSMENT COMMENTS: Habscores/fshscores=29/13, 27/12 (shock), stream assmt 1995-2000: 5 bioassessment sites.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. forms indicate above average habitat quality Diversity of substrates and several sequences of pools and riffles observed. Good pool habitat to hold game fish species. Stream is well-meandered with timber riparian vegetation. Very good diversity of fish observed representing several trophic guilds. Lack of flow stability is probably the major threat to integrity of aquatic community.

1996: Used data from one 1995 biocriteria sampling location. Fish and habitat metrics from the stream use assessment protocol were applied to the data to make use support determination.

For the 1998 report, used results of the 4 DNR bioassessments conducted in October 1997 near McFarland Park, at Story City (2), and upstream from Story City to update the assessment developed for the 1996 report (=FST). Results of these bioassessments were used to upgrade the assessment of support of the Class B(WW) uses from FST to FS due to (1) presence of a very diverse fish community for streams in the Des Moines Lobe subcoregion with from 19 to 25 species from 5 families, (2) presence of nearly all the expected fish taxa with 10 of 11 taxa present at all four sites, (3) presence of the expected game fish species (smallmouth bass) present at all four sites, and (4) lack of violations of Class B(WW) WQ criteria in the samples collected during the bioassessments. This reach of the South Skunk River is naturally prone to occasional low flow periods, but presence of good habitat diversity in this reach (i.e., pools and riffles) help the aquatic communities survive such periods.

For the 2000 report, the October 1997 bioassessment results from 4 DNR bioassessment sites located in the vicinity of the Story City STP wastewater discharge, and 1 location in the South Skunk River Greenbelt were used to update the assessment for the 2000 report. Based on an analysis of benthic macroinvertebrate and fish community health indexes, in addition to water and sediment sampling results from the Story City STP mixing zone, the assessment was downgraded from fully supporting (=FS) to fully supporting threatened (=FS/T). Sampling in the South Skunk River greenbelt approximately 8 miles downstream from the Story City STP indicated aquatic life uses were fully supported. However, a significant decline in biological integrity was found in the stream reach immediately downstream from the STP mixing zone. A higher than normal frequency of diseased fish was found in the downstream reach and in the stream mixing zone. A deposit of organic solids was observed covering the stream bottom in the mixing zone of the stream. Sediments from the mixing zone contained extremely high levels of ammonia, as well as elevated levels of several metals and synthetic organic compounds. The organic deposit was caused by mechanical malfunctions during the final stages of the sewage treatment process. The mechanical problems were fixed and releases of organic solids to the stream were curtailed. Follow-up sampling in 1998 indicated a reduction in the frequency of diseased fish immediately downstream from the STP discharge. The deposit of organic solids on the stream bottom was gone, apparently flushed downstream by high flows. A second follow-up sampling event conducted in September, 2000 confirmed the incidence of diseased fish was remaining within the normal range, and no additional organic solids were accumulating on the stream bottom. The South Skunk River has very poor flow stability and the biological community is particularly vulnerable to organic waste loading from agricultural and/or point sources during low flow periods. Fish consumption uses were assessed as "fully supported." EXPLANATION: Fish consumption uses were assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1998 near Story City. This monitoring showed that all contaminant levels in the composite samples of fillets from carp and smallmouth bass were less than 1/2 of the respective FDA action levels or DNR levels of concern.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Skunk River Basin

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South Skunk River Subbasin

S SKUNK R

-- Squaw Creek to headwaters

Waterbody ID No.: IA 03-SSK-0030

Subsegment No.: 3

Subsegment Description: N.line S36,T85,R23W,Story Co to D.D. #71

Subsegment Length: 52 miles

ASSESSMENT COMMENTS: 1992 SUAs: habscrs/fshscrs=20/10 (shock), 16/9; 1997 Biocriteria: Fish IBI= 34 (fair), BM-IBI= 71(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. forms indicate below average habitat quality primarily due to predominance of wide & shallow flow over shifting sand substrate. A little bit of wood in stream providing some diversity of habitat. Stream is extensively channelized in headwaters. Relatively low diversity and numbers of fish observed - consistent with quality of habitat. Suspect impact from livestock operation near the upstream boundary of B(LR).

For 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, used results of the October 1997 DNR bioassessment 1 mile E of Randall to update the assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=PS). Used results of the 1997 bioassessment to upgrade the assessment of support of the Class B(LR) uses from PS to FST due to (1) presence of a moderately diverse fish community for streams of the Des Moines Lobe subecoregion (11 species from 4 families), (2) presence of a majority of the expected taxa (8 of 11) for streams in this region, and (3) lack of violations of Class B(LR) WQ criteria in the sample collected during the bioassessment. Thus despite the impacts of extensive channelization, this stream continues to support a regionally typical Class B(LR) fish community.

For the 2000 report, the assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 34 (fair) and the BM-IBI score was 71 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Skunk River Basin

South Skunk River Subbasin

S SKUNK R

-- Squaw Creek to headwaters

Waterbody ID No.: IA 03-SSK-0030

Subsegment No.: 4

Subsegment Description: DD 71 (Hamilton Co) to headwaters

Subsegment Length: 52 miles

ASSESSMENT COMMENTS: 1997 bioassessment: 9 spp., 4 fams.
1997 Biocriteria (2 sites): Fish IBI (first site) = 18 (poor) BM IBI (2nd site) = 67 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 or 1996 reports. For the 1998 report, used results of the October 1997 DNR bioassessment 1.5 miles SW of Ellsworth to assess support of the general uses as FST due to (1) moderately diverse fish community for general use reaches of streams in the Des Moines Lobe subecoregion (9 species from 4 families), (2) presence of a majority of the expected fish taxa (8 of 11) for streams in this region, and (3) lack of violations of Class B(LR) WQ criteria in the sample collected during the bioassessment.

2000 report: The assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 18(poor) at site 1, and the BM-IBI score was 67(good) at site 2. The aquatic life use support status was assessed as partially supporting (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

MUD CR

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 03-SSK-0047

Subsegment No.: 0

Subsegment Description: mouth (SW 1/4, S24, T81N, R21W, Jasper Co.) to headwaters

Subsegment Length: 10 miles

ASSESSMENT COMMENTS: 1998 Biocriteria: Fish IBI=31 (fair), BM-IBI=52 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports.

2000 report: The assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 31 (fair), and the BM-IBI score was 52 (fair). The aquatic life use support status was assessed as fully supporting/threatened (=FS/T), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Skunk River Basin

*South Skunk River Subbasin***DYE CR**

-- mouth (Story) to headwaters

Waterbody ID No.: IA 03-SSK-0051

Subsegment No.: 0

Subsegment Description: mouth to trib S7,T83N,R21W Story Co.

Subsegment Length: 3.8 miles

ASSESSMENT COMMENTS: Assessment is based on results of a DNR stream use assessment in October 1994. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report (not desingated for Class B(LR) uses until June 1995).

For the 1996 report, used results of the October 1994 DNR stream use assessment in Story County to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (24) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of very diverse substrates, several pool/riffle sequences, no channel alterations, and moderately stable stream banks, (3) fish score (13) better than the 75th percentile score (10) for stream assessments made with seines, and (4) a relatively diverse fish community (11 species from three families).

For the 1998 report, used a review of the field sheet from the October 1994 DNR stream use assessment in Story County to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (11 species from 3 families) for streams in the Des Moines Lobe subcoregion, (2) presence of a majority of the expected fish taxa (8 of 11) for streams in this subregion, and (3) indications on the field sheet of above average habitat quality (see assessment developed for the 1996 report above). Notes on field sheet indicate that sampling (i.e., seining) was hindered by rocky substrates.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the October 1994 DNR stream use assessment in Story County. The results of the October 1994 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

KEIGLEY BR

-- mouth (Story) to headwaters

Waterbody ID No.: IA 03-SSK-0070

Subsegment No.: 0

Subsegment Description: mouth (Story Co.) to headwaters

Subsegment Length: 2.1 miles

ASSESSMENT COMMENTS: No DNR SUA field sheets for stream in DNR files. 1997 bioassessment: 13 spp., 4 fams. 1997 Biocriteria: Fish IBI = 43(fair), BM-IBI=79(good).SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

"General Use" waterbody; not assessed for the 1994 or 1996 reports. For the 1998 report, used results of the September 1997 DNR bioassessment 1 mi N and 3 mi E of Gilbert to assess support of the general aquatic life uses as FST due to (1) presence of a relatively diverse fish community for general use streams in the Des Moines Lobe subcoregion (13 species from 4 families), (2) presence of a majority of the expected fish taxa (8 of 11) for streams in this region, and (3) lack of violations of Class B(LR) WQ criteria in the sample collected during the bioassessment.

2000 report: The assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 43(fair), and the BM-IBI score was 79(good). The aquatic life use support status was assessed as fully supporting (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

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Rivers and Streams: Skunk River Basin

South Skunk River Subbasin

KEIGLEY BRANCH

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 03-SSK-0073

Subsegment No.: 0

Subsegment Description: unnamed trib (aka DD 1, SE 1/4, S36, T85N, R24W, Story Co.) to hea

Subsegment Length: 16 miles

ASSESSMENT COMMENTS: 1997 Biocriteria: Fish IBI=43 (fair), BM-IBI=79 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully

Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

2000 report: The assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 43 (fair), and the BM-IBI score was 79 (good). The aquatic life use support status was assessed as fully supporting (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Skunk River Basin

South Skunk River Subbasin

BEAR CR

-- mouth (Story) to headwaters

Waterbody ID No.: IA 03-SSK-0080

Subsegment No.: 1

Subsegment Description: mouth to N line S32,T85N,R23W Story Co.

Subsegment Length: 11 miles

ASSESSMENT COMMENTS: 1990 SUAs: habscrs/fshscrs: 21/8 (seine); 18/-; 24/9. 1997 bioassessment: 17 spp., 4 fams.; 1997 Biocriteria: Fish IBI=39 (fair), BM-IBI=82 (excellent).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the April 1990 stream use assessments, and information on riparian buffer project of Schultz (ISU), to assess support of the Class B(LR) aquatic life uses as FST. Success of restoring the riparian vegetation a significant factor in assessing the aquatic life uses as fully supported.

For the 1998 report, used results of the the September 1997 DNR bioassessment conducted in the South Skunk River greenbelt area NE of Ames to update the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST). Used results of the bioassessment to continue to assess support of the Class B(LR) uses as FST due to (1) presence of a relatively diverse fish community (17 species from 4 families) for streams in the Des Moines Lobe ecoregion, (2) presence of a majority of the expected fish taxa (8 of 11) for streams in this region (both catfishes and sunfishes were absent), and (3) lack of violations of Class B(LR) WQ criteria in the sampled collected during the bioassessment.

For the 2000 report, the assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 39 (fair) and the BM-IBI score was 82 (excellent). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Skunk River Basin

South Skunk River Subbasin

BEAR CR

-- mouth (Story) to headwaters

Waterbody ID No.: IA 03-SSK-0080

Subsegment No.: 2

Subsegment Description: N line S32,T85N,R23W to headwaters

Subsegment Length: 11 miles

ASSESSMENT COMMENTS: 1997 bioassessments (spp./fam.): dstr Roland WWTP, 12/4; upstr Roland WWTP, 11/4.
1997 Biocriteria: upstream/downstream Fish IBI= 25(poor)/35(fair), BM-IBI= 58(good)/44(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1994 and 1996 reports. For the 1998 report, used results of the the two September 1997 DNR bioassessments downstream and upstream from the Roland wastewater treatment facility to assess support of the general uses as FST due to (1) a moderately diverse fish community for streams of the Des Moines Lobe ecoregion, (2) presence of a majority of the expected fish taxa for streams in this subecoregion (8 of 11 dstr from WWTP; 7 of 11 usptr from WWTP), and (3) lack of violations of Class B(LR) WQ criteria in samples collected during the bioassessments.

2000 report: The assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score upstream/downstream was 25(poor)/35(fair), and the BM-IBI score was 58(good)/44(fair). The aquatic life use support status was assessed as partially supporting (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Skunk River Basin

South Skunk River Subbasin

LONG DICK CR

-- mouth (Story) to headwaters

Waterbody ID No.: IA 03-SSK-0090

Subsegment No.: 0

Subsegment Description: mo to N line S34,T86N,R23W Hamilton Co.

Subsegment Length: 6.9 miles

ASSESSMENT COMMENTS: 1992 SUA: habscr/fshscr=20/11 (shock). 1997 Biocriteria: Fish IBI=21 (poor), 40 (fair); BM-IBI= 49 (fair), 58 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates below average habitat quality. Where assessed, stream meanders but pasture impacts are evident. Frequent stream bank erosion noted. Pools are small and relatively shallow. Channelized reaches frequently occur. Fish community observed is fairly diverse; only cyprinid species were common.

For the 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, used results of the 2 DNR bioassessments conducted in October 1997 2 mile WNW and 3 miles N of Roland to update the assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=PS). Used results of the 2 bioassessments to upgrade the assessment of support of the Class B(LR) uses from PS to FST due to (1) presence of a moderately diverse fish community (8 species from 2 families & 14 species from 5 families) for streams in the Des Moines Lobe subecoregion, (2) presence of a majority of the expected fish taxa (6 of 11 and 8 of 11) for streams in this subecoregion, and (3) lack of violations of Class B(LR) WQ criteria in the samples collected during the bioassessments. Pasturing of the riparian zone, stream bank erosion, and channelization remain threats to the continued support of the Class B(LR) aquatic life uses.

For the 2000 report, the assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 49 (fair) and the BM-IBI score was 58 (good). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Skunk River Basin

South Skunk River Subbasin

DRAINAGE DITCH 71

-- mouth (Hamilton) to headwaters

Waterbody ID No.: IA 03-SSK-0100

Subsegment No.: 0

Subsegment Description: mouth (S11,T86N,R24W, Hamilton Co.) to headwaters

Subsegment Length: 9.8 miles

ASSESSMENT COMMENTS: Assessment is based on (1) 1997 DNR/UHL bioassessment (Fish IBI= 20 (poor), BM-IBI= 42 (fair)) and (2) occurrence of a fish kill in August 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting

Aquatic Life Support -- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

No information available; not assessed for the 1994 or 1996 reports.

For the 1998 report, used results of the September 1997 DNR bioassessment approximately 2 miles SSE of Jewell to assess support of the general aquatic life uses as FST due to (1) presence of a moderately diverse fish community (10 species from 3 families) for general use streams in the Des Moines Lobe subcoregion, (2) presence of a majority (8 of 11) of the expected fish taxa for streams in this region, and (3) lack of violations of Class B(LR) WQ criteria in the sample collected during the bioassessment. A fish kill was reported for this stream near Jewell on August 7, 1995. This kill was attributed to natural causes; no other information on this kill is available.

2000 report: The assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum). The F-IBI score was 20 (poor), and the BM-IBI score was 42 (fair). The aquatic life use support status was assessed as not supporting (=NS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998. A fish kill occurred on DD-71 on August 19, 1999 at the north side of Jewell in Hamilton County. This kill was attributed to agricultural fertilizer: a brief, hard rain washed a slug of ammonia into DD-71. Approximately 1/2 mile of stream was affected; an estimated 9,300 fish were killed (an additional kill occurred in DD-71 near Jewell on August 7, 1995 (see above)). According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." The assessment based on results of DNR/UHL biocriteria sampling ("not supported"), however, is more restrictive; thus, the final assessment of the general aquatic life uses is "not supported."

Rivers and Streams: Des Moines River Basin

East Fork Des Moines River Subbasin

DES MOINES R, E BR

-- mouth-Humboldt to Buffalo Cr.

Waterbody ID No.: IA 04-EDM-0010

Subsegment No.: 1

Subsegment Description: mouth (Humboldt Co.) to Hwy 169 at Devine Access (S26, T94N, R29

Subsegment Length: 69 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR monthly water quality monitoring station 1 mile N of St. Joseph, Kossuth Co. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Fully
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had 3 of 7 samples collected at approx average flows that had levels of fecal coliforms that exceeded the Class A WQC (43% violation =NS). Three of 36 samples exceeded the Class B(WW) chronic criterion for ammonia (=NS of Class B uses). WQ problems attributed primarily to malfunctioning WWTP at Algona.

For 1994 report, had 2 of 6 samples collected at approx average flows with fecals > Class A WQC; due to lack of complete data, use BPJ to assess as PS. No Class B(WW) WQC were exceeded.

For 1996 report, had violations of Class A WQC for fecal coliform in 6 of the 8 non-flow affected samples; thus, continue to assess as PS based on BPJ. Also had one violation of Class B WQC for TRC in 35 samples (=3% viol); thus assess as FST. Results from fish tissue monitoring at Algona in 1995 by U.S. EPA show all contaminants less than one-half the FDA action level; thus assess fish consumption uses as FS.

For the 1998 report, used results of DNR monthly monitoring nr St. Joseph to assess support of the Class B(WW) aquatic life uses as FST (see account for next subsegment upriver: waterbody IA 04-EDM-0010-2, Devine Access to Algonal WWTP). Also, continue to use results of RAFT sampling in 1995 to assess fish consumption uses as FS due to all contaminants being < 1/2 the respective FDA action levels. Data for levels of fecal coliform bacteria, however, suggest partial support: of the 12 non-runoff affected samples, 3 samples exceeded the Class A WQ criterion of 200 orgs/100 ml. The geometric mean level of fecal coliforms (129 orgs/100 ml) suggests full support, but 17 percent of the samples (2 samples) exceeded 400 orgs/100ml. Thus, according to methods for assessing support of waterbodies designate for primary contact recreation, this river reach partially supports its designated Class A use (see p. 3-34 of the 1998 Section 305(b) guidelines).

For the 2000 report: SUMMARY: Assessed support of the Class A (primary contact recreation) uses as "fully supported/threatened;" support of the Class B(WW) aquatic life uses was assessed as "fully supported." Support of fish consumption uses was changed from "fully supported" to "not assessed." EXPLANATION: Results of DNR monthly monitoring near St. Joseph in 1998-99 showed that less than 10 samples (8 of 14) collected during summer periods of the 1998-99 biennial period and analyzed for levels of fecal coliform bacteria were not materially affected by surface runoff. Thus, according to DNR's assessment methodology for Section 305(b) reporting, the assessment type for the Class A primary contact uses becomes "evaluated" (versus "monitored"). The geometric mean of fecal coliform bacteria in the eight non-runoff-affected samples (169 orgs/100 ml) was less than the WQ criterion of 200 orgs/100 ml, thus suggesting full support of the primary contact recreation uses. Because one of the eight samples contained a level of fecal coliforms greater than U.S. EPA's recommended single sample maximum density of 400 orgs/100 ml, the level of support of the Class A uses was assessed as "fully supporting / threatened." Results of monitoring during the biennial period show no violations of Class B(WW) (aquatic life) water quality criteria in the 24 samples analyzed for dissolved oxygen, pH, and ammonia, and in the one sample analyzed for toxic metals; thus, the aquatic life uses were assessed as "fully supported." The support of fish consumption uses was changed from "fully supported" to "not assessed." The 1995 EPA/DNR fish tissue (RAFT) sampling near Algona was conducted approximately 20 miles upstream from this waterbody segment. The extrapolation of the results from the 1995 sampling to this downstream assessment segment is not justified.

Rivers and Streams: Des Moines River Basin

East Fork Des Moines River Subbasin

DES MOINES R, E BR

-- Buffalo Cr-Kossuth to Tuttle L

Waterbody ID No.: IA 04-EDM-0020

Subsegment No.: 1

Subsegment Description: Buffalo Cr to Soldier Cr S36,T100N,R32W

Subsegment Length: 60 miles

ASSESSMENT COMMENTS: Assessment based on general descr in Harlan et al. (1987). 1997 biocriteria: 13 spp., 4 fams. Fish IBI= 29 (fair), BM-IBI= 46 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information in Iowa Fish and Fishing (Harlan et al. 1987: 11) to assess support of the Class B(WW) uses as FST due to description of the E. Fk. Des Moines River as "an excellent fishing stream. . ." No DNR stream use assessments conducted from 1990-1995 in this reach.

For the 1998 report, used results of the October 1997 DNR bioassessment conducted approximately 9 miles W of Bancroft to update the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST). Used the results from the 1997 bioassessment to continue to assess support of the Class B(WW) uses as FST due to (1) presence of a moderately diverse fish community (13 species from 4 families) for streams in the Des Moines Lobe subecoregion, (2) presence of a majority (8 of 11) of the expected fish taxa for streams in this subecoregion, and (3) presence of the expected game fish species (channel catfish), and (4) lack of violatins of Class B(WW) WQ criteria in the sample collected during the bioassessment.

For the 2000 report, the assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 29 (fair) and the BM-IBI score was 46 (fair). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

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Rivers and Streams: Des Moines River Basin

East Fork Des Moines River Subbasin

DES MOINES R, E BR

-- Buffalo Cr-Kossuth to Tuttle L

Waterbody ID No.: IA 04-EDM-0020

Subsegment No.: 2

Subsegment Description: Soldier Cr S36,T100N,R32W to Tuttle L

Subsegment Length: 60 miles

ASSESSMENT COMMENTS: Assessment is based on results of water quality monitoring conducted in 1997 by the state of Minnesota. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the October 1992 DNR stream use assessment in Emmet County to assess support of the Class B(WW) aquatic life uses as FST due to (1) habitat score (30) far better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of very diverse substrates, numerous pool/riffle sequences, no channel alterations, and very stable stream banks, and (3) comment on field sheet that this reach "is clearly a B(WW) habitat at all flows." Field sheet notes that similar habitat exists for entire reach from Soldier Cr to Tuttle Lake.

For 1998 report, used assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report, along with results of WQ monitoring nr Ceylon, MN (approx 4 miles N of the Iowa/Minnesota state line) to assess the Class B(WW) aquatic life uses as FST. One of the 10 samples collected at this monitoring station between October 1996 and September 1997 violated the Class B(WW) WQ criterion for dissolved oxygen (=10% violations which indicates FS according to the 1998 Section 305(b) guidelines (see p. 3-35).

For the 2000 report: **SUMMARY:** The Class B(WW) aquatic life uses remain "fully supported / threatened." **EXPLANATION:** Continue to use the assessment developed for the 1998 report (see above) that was based on results of water quality monitoring near the Iowa / Minnesota state line. The results of this monitoring are less than 5 years old and thus can be used to assess current water quality conditions.

Rivers and Streams: Des Moines River Basin

East Fork Des Moines River Subbasin

BLOODY RUN

-- mouth-Humboldt to headwaters

Waterbody ID No.: IA 04-EDM-0030

Subsegment No.: 0

Subsegment Description: mouth to trib S1,T92N,R29W Humboldt Co.

Subsegment Length: 3.9 miles

ASSESSMENT COMMENTS: Assessment is based on results of a November 1994 DNR stream use assessment.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the November 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) fish score (12) better than the 75th percentile score (10) for stream use assessments made with seines, (2) indication on field sheet of diverse substrates, several pool/riffle sequences, and only isolated channel alterations (pasturing), and (3) moderately diverse fish community with two darter species (johnny and blackside). Habitat score (21) just below overall median score (22) for DNR stream use assessments. Threat to continued support of aquatic life uses appears to be pasturing of riparian zone.

For the 1998 report, used a review of the field sheet from the November 1994 DNR stream use assessment to continue to assess support of the Class B(LR) aquatic life uses as FST. Due to problems with seining in this stream, additional monitoring is needed to better define the status of the aquatic communities of this stream.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." EXPLANATION: Continued to use the assessment of support of the Class B(LR) uses developed for the 1998 report (see above).

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Des Moines River Basin

East Fork Des Moines River Subbasin

BLACK CAT CR

-- mouth-Kossuth to headwaters

Waterbody ID No.: IA 04-EDM-0060

Subsegment No.: 0

Subsegment Description: mouth to N line S5,T97N,R30W Kossuth Co.

Subsegment Length: 25 miles

ASSESSMENT COMMENTS: Habscr/fshscr: 25/10 (seine) (score corrected due to error in scoring % pollution tolerant species); 1997 Biocriteria: Fish IBI=51 (good), BM-IBI=74 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the October 1992 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (25) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of diverse substrates, numerous pool/riffle sequences, and relatively stable stream banks, (3) fish score (10) equal to 75th percentile score for stream assessments made with seines (although only 3 species were captured probably due to deep water in pools). Threats to continued support of aquatic life uses include pasturing of riparian zone and impacts of past channelization.

For the 1998 report, used results of the August 1997 DNR biocriteria sampling approx 7 mi NNW of Algona to update the assessment of support of the Class B(LR) aquatic life uses. Based on results of the biocriteria sampling, continue to assess support of the Class B(LR) uses as FST due to (1) presence of a relatively diverse fish community of 18 species from 5 families, (2) presence of a majority of the expected fish taxa (8 of 11) for streams in the Des Moines Lobe subcoregion, and (3) lack of violations of Class B(LR) WQ criteria in the sample collected during biocriteria sampling. Threats identified are those from the assessment developed for the 1996 Section 305(b) report (see above).

For the 2000 report, the assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 51 (good) and the BM-IBI score was 74 (good). The aquatic life use support was assessed as fully supported (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

East Fork Des Moines River Subbasin

PLUM CR

-- mouth-Kossuth to headwaters

Waterbody ID No.: IA 04-EDM-0070

Subsegment No.: 0

Subsegment Description: mouth to trib S16,T96N,R27W Kossuth Co.

Subsegment Length: 12 miles

ASSESSMENT COMMENTS: Habscr/fshscr: 25/11 (seine) (fish score corrected due to error in scoring % pollution tolerant species); 1997 Biocriteria: Fish IBI=31 (fair), BM-IBI=75 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the October 1992 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (25) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of diverse substrates, several pool/ riffle sequences, and stable stream banks, and (3) a moderately diverse fish community. Information on field sheet suggests that continued support of aquatic life uses is threatened by channel alterations, including removal of riparian vegetation (trees) and pasturing of the riparian zone.

For the 1998 report, used results of the August 1997 DNR biocriteria sampling approx. 7 miles NE of Algona to update the 1996 assessment of support of the Class B(LR) aquatic life uses. Based on results of the biocriteria sampling, continue to assess support of the Class B(LR) uses as FST due to (1) presence of a moderately diverse fish community (15 species from 6 families), (2) presence of a majority of the expected fish taxa (7 of 11) for streams in the Des Moines Lobe subecoregion, and (3) lack of violations of Class B(LR) WQ criteria in the sample collected during biocriteria sampling. Threats to full support are those identified in the assessment developed for the 1996 Section 305(b) report.

For the 2000 report, the assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 31 (fair) and the BM-IBI score was 75 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Des Moines River Basin

Fox River Subbasin

FOX R

-- IA/MO line-VanBuren to headwat

Waterbody ID No.: IA 04-FOX-0010

Subsegment No.: 1

Subsegment Description: IA/MO line to unnamed trib (S6, T68N, R12W, Davis Co.)

Subsegment Length: 66 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) USGS water quality monitoring in 1998 and 1999 near Mount Sterling and Milton and (2) UHL biological monitoring near the IA/MO state line in 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of four November 1990 DNR stream use assessments to assess support of the Class B(LR) aquatic life uses as PS due to (1) habitat scores (21, 22, 20, and 25) general equal to or worse than the overall median score (22) for DNR stream use assessments, (2) indications on most field sheets of few or no pool/riffle sequences, extensive channel alterations (straightening), and unstable (erosive) stream banks, (3) fish scores (11, 11, 12) equal to or worse than the 75th percentile score (12) for stream assessments made with electrofishers, and (4) fish communities with rel. low number of species. Assessment made at upstream boundary of the Class B(LR) reach shows considerably better habitat quality than in downstream reaches due to lessening of channelization impacts.

For the 1998 report, used a review of the field sheets from the three DNR stream use assessments from November 1990 to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to (1) occurrence of the expected diversity of the fish community (species/families, dstr to upstr: 8/3, 8/3, 9/3) for streams in the Central Irregular Plains (40) ecoregion and (2) presence of a majority of the expected fish taxa at two of the three assessment sites (4 of 8, 6 of 8, and 6 of 8) for streams in this ecoregion. Nearly the entire Class B(LR) reach of the Fox River has been extensively channelized; yet, the stream continues to support a typical Class B(LR) fish community for this ecoregion. The three DNR stream use assessments were conducted very late in the year in 1990 (late November); in addition, these assessments were conducted more than 5 years ago. Thus, additional monitoring is needed to update these assessments and to determine the status of the aquatic communities and habitats.

For the 2000 report: **SUMMARY:** The Class B(LR) aquatic life uses were assessed as "fully supporting / threatened." **EXPLANATION:** The biological data used to develop the assessment for the 1998 report (see above) were collected in 1990 and are now considered too old (greater than five years) to be useful for assessing current water quality conditions. For the 2000 assessment, the 44-mile Fox River waterbody segment (IA 04-FOX-0010-0) was divided into two subsegments (IA 04-FOX-0010-1 and IA 04-FOX-0010-2) of approximately equal length. Results of water quality monitoring from two sources were used to develop the current assessment of support of the Class B(LR) uses: (1) chemical water quality monitoring conducted in 1998 and 1999 by the U.S. Geological Survey at two stations (Milton and Mount Sterling) (see May et al. 1999 and Nalley et al. 2000) and (2) biological monitoring conducted approximately 3 miles south of the Iowa / Missouri state line in October 1998 by the University of Iowa Hygienic Laboratory (see Luzier and Miller 1999). USGS monitoring in 1998 and 1999 showed no violations of Class B(LR) water quality criteria for dissolved oxygen, pH, and ammonia-nitrogen in the approximately 12 samples collected at the Milton and Mt. Sterling stations. Of the 12 samples analyzed for toxic metals, one sample at each station exceeded a state water quality criterion. The samples collected on June 10, 1999 at Milton (60 ug/l) and June 11, 1999 at Mt. Sterling (100 ug/l) both exceeded the Class B(LR) chronic water quality criterion for copper (55 ug/l). These samples were collected during a high flow event on the Fox River; the June 10 stream flow at the Milton station was 259 cfs; the June 11 stream flow at the Mt. Sterling station was 1010 cfs. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), this one violation of a toxic contaminant does not suggest an impairment of the aquatic life uses. Based on DNR's assessment methodology for Section 305(b) reporting, however, this violation suggests that the Class B(LR) aquatic life uses should be assessed as "fully supported/threatened." Although not designated for Class C (drinking water) uses, from 40 to 50 percent of the 10 samples from each station analyzed for pesticides exceeded the U.S. EPA MCL of 3.0 ug/l. None of the approximately 12 samples at each station exceeded the nitrate MCL of 10.0 mg/l. Results of biological monitoring in 1998 by UHL showed a moderately diverse fish community for streams in the Central Irregular Plains ecoregion, with 15 species from 6 families and with a majority of the expected fish taxa (7 of 9) for Class B(LR) streams in this ecoregion. Based on DNR's assessment methodology for Section 305(b) reporting, the composition of the fish community suggests that the Class B(LR) uses are "fully supported / threatened." Thus, based on results of chemical and biological monitoring conducted in this river reach during the 1998-1999 biennial period, the Class B(LR) aquatic life uses are assessed as "fully supported / threatened."

Rivers and Streams: Des Moines River Basin

Fox River Subbasin

FOX R -- IA/MO line-VanBuren to headwat Waterbody ID No.: IA 04-FOX-0010
 Subsegment No.: 2 Subsegment Description: unnamed trib (S6, T68N, R12W, Davis Co.) to unnamed trib (S29,T69 Subsegment Length: 66 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) USGS monitoring in 1998 and 1999 near Bloomfield, West Grove and Paris and (2) UHL biological monitoring near Pulaski and West Grove in 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of four November 1990 DNR stream use assessments to assess support of the Class B(LR) aquatic life uses as PS due to (1) habitat scores (21, 22, 20, and 25) general equal to or worse than the overall median score (22) for DNR stream use assessments, (2) indications on most field sheets of few or no pool/riffle sequences, extensive channel alterations (straightening), and unstable (erosive) stream banks, (3) fish scores (11, 11, 12) equal to or worse than the 75th percentile score (12) for stream assessments made with electrofishers, and (4) fish communities with rel. low number of species. Assessment made at upstream boundary of the Class B(LR) reach shows considerably better habitat quality than in downstream reaches due to lessening of channelization impacts.

For the 1998 report, used a review of the field sheets from the three DNR stream use assessments from November 1990 to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to (1) occurrence of the expected diversity of the fish community (species/families, dstr to upstr: 8/3, 8/3, 9/3) for streams in the Central Irregular Plains (40) ecoregion and (2) presence of a majority of the expected fish taxa at two of the three assessment sites (4 of 8, 6 of 8, and 6 of 8) for streams in this ecoregion. Nearly the entire Class B(LR) reach of the Fox River has been extensively channelized; yet, the stream continues to support a typical Class B(LR) fish community for this ecoregion. The three DNR stream use assessments were conducted very late in the year in 1990 (late November); in addition, these assessments were conducted more than 5 years ago. Thus, additional monitoring is needed to update these assessments and to determine the status of the aquatic communities and habitats.

For the 2000 report: **SUMMARY:** The Class B(LR) aquatic life uses were assessed as "not supported." **EXPLANATION:** The biological data used to develop the assessment for the 1998 report (see above) were collected in 1990 and are now considered too old (greater than five years) to be useful for assessing current water quality conditions. For the 2000 assessment, the 44-mile Fox River waterbody segment (IA 04-FOX-0010-0) was divided into two subsegments (IA 04-FOX-0010-1 and IA 04-FOX-0010-2) of approximately equal length. Results of water quality monitoring from two sources were used to develop the current assessment of support of the Class B(LR) uses: (1) chemical water quality monitoring conducted in 1998 and 1999 by the U.S. Geological Survey at three stations (Bloomfield (S27, T69N, R13W), West Grove (NW1/4, S27, T69N, R15W), and Paris (NE1/4, S24, T69N, R15W)) (see May et al. 1999 and Nalley et al. 2000) and (2) biological monitoring conducted near Pulaski and West Grove in Davis County in October 1998 by the University of Iowa Hygienic Laboratory (see Luzier and Miller 1999). The West Grove and Paris stations are located near the upstream boundary of this Class B(LR) segment. USGS monitoring in 1998 and 1999 showed no violations of Class B(LR) water quality criteria for dissolved oxygen, pH, and ammonia-nitrogen in the 12 samples collected at the Bloomfield or Paris stations. At the West Grove (most upstream) station, however, two of 12 samples violated the Class B(LR) criterion for dissolved oxygen, and three of 12 samples violated Class B(LR) chronic criteria for ammonia-nitrogen. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), the percentage of violations of the dissolved oxygen criterion (17%) indicates that the Class B(LR) uses are only "partially supported." According to these same guidelines (U.S. EPA 1997b, page 3-18), the three violations (25%) of chronic criteria for ammonia-nitrogen indicate "nonsupport" of the Class B(LR) uses. Of the 12 samples analyzed for toxic metals, one sample at each station exceeded a state water quality criterion. The samples collected at all three stations on June 10, 1999, exceeded the Class B(LR) chronic water quality criterion for copper (55 ug/l): the level at Bloomfield was 120 ug/l, at Paris 90 ug/l, and at West Grove 110 ug/l. These samples were collected during a high flow event on the Fox River; the June 10 stream flow was 599 cfs at Bloomfield, 1,140 at Paris, and 1,170 cfs at the West Grove station. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), a single violation of a criterion for a toxic contaminant does not suggest an impairment of the aquatic life uses. Based on DNR's assessment methodology for Section 305(b) reporting, however, this violation suggests that the Class B(LR) aquatic life uses should be assessed as "fully supported / threatened." Although not designated for Class C (drinking water) uses, from 30 to 40 percent of the 10 samples from each station analyzed for pesticides during the 1998-1999 period exceeded the U.S. EPA MCL of 3.0 ug/l. None of the 12 samples at collected at each station exceeded the nitrate MCL of 10.0 mg/l. Results of biological monitoring in 1998 by UHL showed moderately diverse fish communities for streams in the Central Irregular Plains ecoregion, with 14 species from 4 families at the Paluski station and 13 species from 5 families at the West Grove station. These sites contained all (9 of 9 at Pulaski) or nearly all (8 of 9 at West Grove) of the expected fish taxa for Class B(LR) streams in this ecoregion. Based on DNR's assessment methodology for Section 305(b) reporting, the composition of the fish community suggests that the Class B(LR) uses are "fully supported." However, based on results of chemical water quality monitoring 1998-1999 biennial period that show repeated violations of state water quality criteria for dissolved oxygen and ammonia-nitrogen, the Class B(LR) aquatic life uses of this stream reach are assessed as "not supported."

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

Fox River Subbasin

LITTLE FOX R

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 04-FOX-0012

Subsegment No.: 0

Subsegment Description: Iowa/Missouri state line (S18, T67N, R10W, Van Buren Co.) to headw

Subsegment Length: 15 miles

ASSESSMENT COMMENTS: Assessment is based on results of UGSG water quality monitoring in 1998 and 1999 near Cantril. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports.

For the 2000 report: **SUMMARY:** The general aquatic life uses were assessed as "fully supported." **EXPLANATION:** Results of chemical water quality monitoring conducted by the U.S. Geological Survey in 1998 and 1999 at the Iowa / Missouri state line south of Cantril Van Buren County) were used to develop the current assessment of support of the general aquatic life uses. This USGS monitoring showed no violations of Class B(LR) water quality criteria for dissolved oxygen, pH, and ammonia-nitrogen in the 13 samples collected. None of the nine samples analyzed contained toxic metals above Class B(LR) chronic criteria. Although not designated for Class C (drinking water) uses, four of the 11 samples from this station analyzed for pesticides during the 1998-1999 period exceeded the U.S. EPA MCL of 3.0 ug/l. None of the 13 samples analyzed exceeded the nitrate MCL of 10.0 mg/l. Thus, based on results of chemical water quality monitoring 1998-1999 biennial period, the general aquatic life uses of this stream reach are assessed as "fully supported." Biological monitoring is needed to determine the status of the aquatic communities of this stream reach.

VALLEY BRANCH

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 04-FOX-0015

Subsegment No.: 0

Subsegment Description: mouth (S2, T67N, R10W, Van Buren Co.) to headwaters.

Subsegment Length: 4 miles

ASSESSMENT COMMENTS: Assessment is based on results of USGS water quality monitoring near Mt. Sterling in 1998 and 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports.

For the 2000 report: **SUMMARY:** The general aquatic life uses were assessed as "fully supported." **EXPLANATION:** Results of chemical water quality monitoring conducted by the U.S. Geological Survey in 1998 and 1999 near Mt. Sterling in Van Buren County were used to develop the current assessment of support of the general aquatic life uses. USGS monitoring in 1998 and 1999 showed no violations of Class B(LR) water quality criteria for dissolved oxygen and ammonia-nitrogen in the nine samples collected. The level of pH in one of the nine samples, however, violated the Class B(LR) pH criterion of 6.5 units. The sample collected on March 2, 1999 contained a pH of 6.3 units. According to DNR's assessment methodology for Section 305(b) reporting, the single violation of the pH criterion in nine samples does not indicate a threat to, or impairment of, the aquatic life uses. None of the nine samples analyzed contained toxic metals above Class B(LR) chronic criteria. Although not designated for Class C (drinking water) uses, two of the seven samples from this station analyzed for pesticides during the 1998-1999 period exceeded the U.S. EPA MCL of 3.0 ug/l. None of the nine samples analyzed exceeded the nitrate MCL of 10.0 mg/l. Thus, based on results of chemical water quality monitoring 1998-1999 biennial period, the general aquatic life uses of this stream reach are assessed as "fully supported." Biological monitoring is needed to determine the status of the aquatic communities of this stream reach.

Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins

DES MOINES R

-- mouth (Lee) to Soap Cr

Waterbody ID No.: IA 04-LDM-0010

Subsegment No.: 0

Subsegment Description: mouth to Soap Cr S35,T71N,R12W WapelloCo

Subsegment Length: 76 miles

ASSESSMENT COMMENTS: Assessment is based on (1) results of DNR quarterly WQ monitoring in FY96 & FY 97 and (2) fish tissue monitoring in 1998 and 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Threatened	Primary Contact (Recr)	-- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Results from 1992 RAFT (CCAT fillets) and 1994 RAFT (whole fish, carp = trend site) show all contaminants < 1/2 FDA action level in 1992 fillet samples and only chlordane > 1/2 FDA AL in 1994 whole fish carp sample (0.25 mg/kg). Thus, due to lack of fillet data > 1/2 FDA ALs, and due to all levels < FDA levels in whole fish, assess fish consumption use as FST. The 1996 "Fishing Forecast" from the March/April 1996 "Iowa Conservationist" suggests that the lower Des Moines River is good to excellent for channel catfish and flathead catfish. Thus, assess the Class B(WW) aquatic life uses as FST. Threats to continued support of the aquatic life uses include high loads of silt delivered to the river via tributaries.

For the 1998 report, used assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report, in combination with results of DNR quarterly monitoring S of Keokuk from October 1995 through September 1997, to assess support of the Class B(WW) aquatic life uses as FST. No violations of WQ criteria for either conventional or toxic pollutant occurred during this two year period. In addition, used results of the three non-flow affected samples analyzed for fecal coliform bacteria over the 1996-97 period to assess support of the Class A primary contact uses as FST: levels of fecal coliforms in the three samples ranged from 20 to 150 orgs/100 ml with a geometric mean of 55. Based on methods for assessing support of primary contact uses as described in 1998 Section 305(b) reporting guidelines (p. 3-34), the data from this station suggest full support of these uses. Due to lack of sufficient number of samples to make "monitored" assessments, the assessments of use support in this reach are considered "evaluated." Levels of all fish contaminants in the RAFT fish tissue sample of whole- fish carp collected near Keosauqua in 1996 were < 1/2 of FDA action levels and DNR levels of concern. Thus, assess support of the fish consumption uses as "fully supporting" (=FS).

For the 2000 report: SUMMARY: Continued to assess support of both the Class A (primary contact recreation) uses and the Class B(WW) aquatic life uses as "fully supported / threatened." Based on results of EPA/DNR (RAFT) fish tissue monitoring, fish consumption uses were assessed as "fully supported/threatened." EXPLANATION: The assessments of the Class A and Class B(WW) uses are those developed for the 1998 report; these assessments were based on results of the two years of DNR quarterly monitoring (1996-1997) on the Des Moines River at Keokuk (see assessment for the 1998 report above). Results of EPA/DNR fish tissue (RAFT) trend monitoring near Keosauqua in 1998 showed that levels of technical chlordane in whole-fish common carp (0.29 ppm) were just below the U.S. FDA action level of 0.30 ppm. Although levels of organochlorine contaminants in whole-fish samples tend to overestimate levels in the edible portion of the fish, this level of chlordane suggest that levels in edible portions may be greater than 1/2 of the FDA action level for chlordane. Thus, according to DNR's assessment methodology, the fish consumption uses should be assessed as FST. In addition, results of RAFT (fish tissue) status monitoring in 1999 showed that levels of all contaminants in fillet samples from common carp and freshwater drum collected from the Des Moines River near Croton were well below 1/2 of the respective FDA action levels as well as DNR levels of concern. Due to recent expansion of the DNR WQ monitoring network, monthly monitoring began at the Keokuk station in October 1999; more adequate data will be available for assessing the aquatic life and primary contact uses at this station for the 2002 report.

Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins**DES MOINES R**

-- Soap Cr to Red Rock Dam

Waterbody ID No.: IA 04-LDM-0020

Subsegment No.: 1

Subsegment Description: Soap Cr to Ottumwa dam S24,T72N,R14W

Subsegment Length: 65 miles

ASSESSMENT COMMENTS: Assesment is based on (1) results of 5/22/95 visit by DNR/ EPD staff and (2) fish tissue (RAFT) monitoring in 1997 and 1999. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Threatened	Primary Contact (Recr)	-- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996 report, did not have information for assessing support of the Class A (swimmable) uses or Class B(WW) fish consumption uses. Used general informaiton from the March/April "Iowa Conservationist" (1996 Fishing Forecast) to assess support of the Class B(WW) aquatic life uses as FST due to indication that the lower Des Moines provides good fishing for channel catfish and flathead catfish and that the reach immediately downstream from the dam at Ottumwa is excellent for walleyes. Class A use assessed as partial support based on known CSO discharges. 1/4/95 list of CSOs indicates City of Ottumwa has 9 CSOs which discharge to the Des Moines Rvr. or the Ottumwa Lagoon during wet weather. CSOs are sources of pathogens, BOD and nutrient enrichment in these waters. On June 8, 1995, 3 CSOs were observed discharging to the river after a 2-3" rain. Fecal matter was observed being discharged directly into the river. No monitoring data are available to substantiate partial support assessment. However, WQ staff judgement is that swimming use would be partially supported at best.

For the 1998 report, changed the assessment of the Class B(WW) aquatic life uses to "not assessed" due to lack of either chemical or biological WQ information from this river reach. Continue to use the assessment from the 1996 report that the Class A uses are likely only partially supported due to combined sewer overflows. Results of fish tissue sampling near Cliffland in August 1997 for the DNR/U.S. EPA RAFT program showed levels of all contaminants to be less than 1/2 of FDA action levels in the composite sample of sauger filets. Levels of all contaminants except technical chlordanes were less than 1/2 the FDA action level in the composite sample of carp filets. The level of technical chlordanes was 0.22 ppm; this exceeds one-half the FDA action level of 0.30 ppm.; thus, assess support of fish consumption uses as FST. This site will be placed on an every-other-year RAFT monitoring schedule due to the level of technical chlordanes and due to high levels of chlordanes found downstream from Ottumwa in the late 1980s.

For the 2000 report: SUMMARY: Continued to use the assessment of support of the Class A (primary contact recreation) uses developed for the 1998 report ("partially supported"). Due to the lack of water quality monitoring information, continued to consider the Class B(WW) aquatic life uses as "not assessed." Fish consumption uses remain assessed as "fully supported/threatened. EXPLANATION: The assessment of the Class A primary contact uses remains based on observations of combined sewer overflows to the Des Moines River by DNR staff in June 1995 (see above assessment for the 1996 report). That is, the contributions of the combined sewer overflows would likely cause elevated levels of indicator bacteria in this reach of the Des Moines River. The Class B(WW) aquatic life uses remain "not assessed" due to the lack of recent water quality information upon which to base an assessment. The DNR quarterly monitoring station at Ottumwa was last monitored in 1992 and 1993; these data are considered too old (greater than five years) for determining current water quality conditions. Due to recent expansion of the DNR WQ monitoring network, monthly monitoring began at the Ottumwa station in October 1999. Data from this monitoring will enable development of an updated assessment for the Class A uses and an assessment of the Class B(WW) aquatic life uses for the 2002 report. Fish consumption uses remain assessed as FST. As noted above, results of EPA/DNR (RAFT) fish tissue monitoring in 1997 showed that the level of technical chlordanes in the sample of common carp filets (0.22 ppm) was greater than one-half the FDA action level (0.30 ppm). Due to sampling difficulties, a complete sample was not obtained for RAFT follow-up monitoring in 1999. The partial sample of channel catfish filets, however, contained 0.29 ppm of technical chlordanes; this level is just below the FDA action level of 0.300 ppm. Based on DNR's assessment methodology, these contaminant levels suggest that fish consumption uses should be assessed as "fully supported/threatened." Additional fish tissue monitoring will be conducted for the 2001 RAFT to better determine levels of chlordanes in the bottom-feeding fish of this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins

DES MOINES R

-- Soap Cr to Red Rock Dam

Waterbody ID No.: IA 04-LDM-0020

Subsegment No.: 2

Subsegment Description: Ottumwa dam to Cedar Cr S33,T75N,R17W

Subsegment Length: 65 miles

ASSESSMENT COMMENTS: Assessment is based on information from DNR Water Quality Bureau / Water Supply Section.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Partial		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996 report, had no information on which to assess the Class B(WW) fish consumption uses, the Class A (swimmable) uses, or the Class C (drinking water) uses. Nearest upstream monitoring is conducted approx. 1 mile downstream from Red Rock Reservoir. Thus, used general information from the March/April 1996 issue of the "Iowa Conservationist" to assess support of the Class B(WW) uses as FST due to recommendations in this reach of river for channel catfish and flathead catfish fishing.

For the 1998 report, changed the assessment of the Class B(WW) aquatic life uses to "not assessed" due to the lack of either chemical or biological information for this reach of river. No information available for assessing support of the Class A primary contact recreation uses.

For the 2000 report: SUMMARY: Continue to consider support of the Class A (primary contact recreation) uses, the Class B(WW) aquatic life uses, and fish consumption uses to be "not assessed." Support of the Class C (drinking water) uses were assessed as "partially supported." EXPLANATION: Insufficient water quality monitoring information is available for this river reach upon which to base an assessment of support of either the Class A (primary contact recreation) uses, the Class B(WW) aquatic life uses, or the fish consumption uses. Data from the DNR quarterly WQ monitoring station at Ottumwa are (1) too old (greater than five years) to be useful for developing water quality assessments of current conditions and (2) influenced by urban activities and thus do not likely reflect water quality conditions upstream from the city. Used information from the DNR Water Supply Section, however, to assess support of the Class C (drinking water) uses as partially supported (=PS) due to issuance by Cargill Inc. (Eddyville) of a notice of an MCL violation for nitrate on June 11, 1998. According to EPA and DNR methods for assessing support of Class C (drinking water) uses, one or more drinking water advisory lasting 30 days or less per year suggests that the Class C use is only partially supported (see pages 3-38 to 3-44 of U.S. EPA 1997b and the DNR assessment methodology for Section 305(b) reporting).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins

DES MOINES R

-- Soap Cr to Red Rock Dam

Waterbody ID No.: IA 04-LDM-0020

Subsegment No.: 3

Subsegment Description: Cedar Cr S33,T75N,R17W to Red Rock Dam

Subsegment Length: 65 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted by Iowa State Univ. as part of the ACOE's Des Moines R./Saylorville Res./Red Rock Res. water quality study. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Not supporting
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had 1 of 7 samples collected at approx average flows exceeding Class A WQC for fecal coliforms (= 14% violation = PS [probably an overly restrictive assessment]). With the exception of relatively high number of samples with Hg > Class B(WW) WQC, no violations of Class B WQC.

For 1994 report, had no violations of Class A WQC for fecals in 7 samples collected at approx average flows; assess Class A supp as FST. Although no Class B WQC were exceeded, thesis by Lutz (1993) documents impairments to fish community due to supersaturation of dissolved gasses as seen in frequent fish kills and in examination of fish. Due to continued high use of area by fisherman, assessed support of Class B uses as PS. Lutz notes that source of supersaturation is unknown but that operat. of dam is an important factor. No viols at DNR quarterly station.

For 1996 report, had 1 viol in 14 samples for fecal coliform bacteria (=7% violation =FS). Only violations of Class B WQ criteria were copper (1 of 8 samples = 12% viol) and mercury (6 of 9 samples = 67 % viol). Sources of both metals are unknown and are probably naturally occurring. In addition, despite rel large % of Hg violations, Hg levels in fish are <<FDA action level of 1.0 ppm. Problem with gas supersaturation remains as described in Lutz (1993) and Lutz (1995); thus, assess aquatic life use as PS; cause (100: unknown toxicity) and source (8800: upstream impoundment) from 1994 report remain valid.

For 1998 report, had no violations of the Class A WQ criterion for fecal coliform bacteria in the 13 non-flow affected samples collected during summers of 1996 and 1997 (=FS). Levels of fecal coliforms ranged from 1 to 90 orgs/100 ml. Had no violations of Class B(WW) WQ criteria for conventional pollutants in the 46 samples collected over the 1996-97 period. Class B(WW) WQ criteria for three toxic metals, however, were exceeded during the Oct 94-Sep 97 period: 2 of 12 samples (17%)exceeded the chronic criterion for copper (=NS according to 1998 Section 305(b) Guidelines, p. 3-18); one of 12 samples (8%) exceeded the chronic criterion for zinc (=FS); and 8 of 11 samples (73%) exceeded the chronic criterion for mercury (due to problems with analysis for mercury in water, and based on recommendations of Section 305(b) reporting guidelines, did not use data for mercury to develop this assessment). Levels of pesticides (e.g., dieldrin and chlordane) in composite samples of whole-fish carp collected in 1996 & 97 were all below 1/2 the FDA action levels (=FS fish consumption uses). Problems with gas supersaturation remain: fish kill on Aug. 12, 1997 attributed to this problem.

For the 2000 report: SUMMARY: Continue to assess support of the Class A (primary contact recreation) uses as "fully supporting," the Class B(WW) aquatic life uses as "not supported," and the fish consumption uses as "fully supported". EXPLANATION: The assessments of support of the beneficial uses are based on results of water quality monitoring and fish kill reporting conducted by Iowa State University (under contract with the U.S. Army Corps of Engineers) as part of the Des Moines River Water Quality Study (see Lutz et al. 1999 and Lutz 2000). Monitoring results from the ISU/ACOE station 0.7 mi downstream from Red Rock Dam showed that (1) geometric means for fecal coliform (indicator) bacteria in summer periods of 1998 and 1999 were well below the state WQ criterion of 200 organisms/100 ml and (2) no samples exceeded the U.S. EPA-recommended single sample maximum value for fecal coliforms (400 orgs/100 ml). At this monitoring station, the geometric mean of the 6 non-runoff-affected samples collected during 1998 and 1999 was 19 orgs/100 ml, with 0% of the samples exceeding the 400 organism/100 ml single sample maximum. The maximum value of all 18 samples collected at this station during summers of 1998 and 1999 was 63 orgs/100 ml, thus indicating extremely low levels of indicator bacteria in this reach of river. According to U.S. EPA guidelines for Section 305(b) reporting, if geometric means for fecal coliforms are less than 200 organisms/100 ml, and if less than 10% of samples exceed 400 orgs/100 ml, the primary contact recreation uses are "fully supported" (see pgs 3-33 to 3-35of U.S. EPA 1997b). Results from this ISU/ACOE monitoring station suggest that the Class B(WW) aquatic life uses are "fully supported/threatened." No violations of Class B(WW) water quality criteria for conventional parameters (dissolved oxygen, pH, ammonia-nitrogen) occurred in the 47 samples collected at this station during the 1998-99 biennial period. In the nine samples analyzed for toxic metals, the only violations were for mercury: all nine samples analyzed for toxic metals during the 1998-99 biennial period contained levels of dissolved mercury above the Iowa WQ criterion of 0.05 ug/l. Due, however, to (1) problems with analysis of mercury in water (see pages 3-58 and 3-99 to 3-100 of Iowa's 1996 Section 305(b) report) and (2) the historical lack of high levels of mercury in fish tissue samples from this reach of river, data for mercury in water were not used to assess support of the Class B(WW) aquatic life uses of this river reach. In addition, a recent study (Montgomery and Watson 1998) was conducted to determine whether levels of mercury in the vicinity of Des Moines presented a water quality problem. Study results showed that (1) average levels of mercury in the Des Moines River ranged from 2.7 to 2.8 ng/l and were well below the Iowa water quality criterion of 50 ng/l; (2) levels of mercury in effluent of the Des Moines wastewater treatment plant averaged 3.30 ng/l but account for only 1.7 percent of the total river mercury load leaving the city of Des Moines, (3) mercury levels in Des Moines River fish (maximum of 0.179 ppm) were well below the FDA action level of 1.0 ppm, (4) most of the mercury loading seen at Des Moines comes from upstream areas in the Des Moines and especially the Raccoon river basins, and (5) river mercury concentrations were strongly correlated to total suspended solids concentrations. Due to continuing uncertainty regarding the significance of mercury levels in the Des Moines River, the assessment of support of the Class B(WW) aquatic life uses was downgraded from "fully supported" to "fully supported / threatened." Fish contaminant

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monitoring conducted downstream from Red Rock Reservoir by ISU/ACOE in 1998 and 1999 showed that levels of contaminants (dieldrin, chlordane, alachlor, trifluralin, and chlorpyrifos) in composite samples of whole fish and fillets of common carp were all less than 1/2 of the respective FDA action levels or DNR levels of concern. Thus, fish consumption uses were assessed as "fully supported." For more information on ISU/ACOE water quality monitoring in this river reach, see Lutz et al. (1999) and Lutz (2000). Four fish kills were reported for this river reach during the 1998-1999 biennial period. These kills occurred on September 20, 1998; August 20, 1999, August 31, 1999; and September 14, 1999. Relatively few fish were reported for these kills, with from six to 80 fish reported for the four kills. All kills were attributed to gas bubble trauma (see Lutz et al. 1999:171 and Lutz 2000:181-182). According to DNR's assessment methodology for Section 305(b) reporting, occurrence of more than two fish kills during the most recent three-year period suggests that the aquatic life uses are "not supported." Thus, the Class B(WW) aquatic life uses of this river reach remained assessed as "not supported" due to repeated fish kills.

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DES MOINES R

-- up end Red Rock to Raccoon R.

Waterbody ID No.: IA 04-LDM-0040

Subsegment No.: 0

Subsegment Description: upper end of Red Rock Reservoir to Raccoon R.

Subsegment Length: 42 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring at Des Moines and Runnells conducted by Iowa State Univ. as part of the ACOE's Des Moines R./Saylorville Res./Red Rock Res. water quality study. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Threatened
Fish Consumption	-- Threatened	Primary Contact (Recr)	-- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, Class B uses assessed as NS due to fish consumption advisory issued in Dec 1989; aquatic life support assessed as FST due to lack of Class B(WW) WQC violations. Support of Class A uses assessed as NS (as in previous 305(b)s) due to levels of fecal coliforms exceeding Class A WQC in 15 of 19 samples collected at approx average flows; source of fecals believed the DM WWTP.

For 1994 report, Class B uses assessed as FST due to lifting of fish consumption advisory in April 1993 due to declining levels of tech. chlordane (although levels are still > 1/2 FDA action level). Class A uses assessed as PS (an improvement): 5 of 7 samples collected at approx average flows exceeded Class A WQC, but levels of FCB have declined considerably possibly due to upgrades at DM WWTP; too few non-flow affected data from Runnell station to make assessment. Continue to have 50-60% viol of Hg criterion.

For 1996 report, at Hwy 46 had 14 of 16 non-flow affected samples viol Class A WQC for fecal coliforms; 14 of 18 samples at Runnells also in violation; thus, assess Class A as NS. This is a more severe assessment than the PS in 1994. Levels have declined from early 1980s but still generally > 200 orgs/100ml. Of the 46 samples analyzed at each station for toxics, only had 1 of 8 samples > Class B WQC for copper, and had 6 of 9 samples in viol of Class B WQC for mercury (=67%). Based on lack of source and on lack of HG problems in fish tissue, data for Hg and Cu are disregarded for 305(b) assessments.

For the 1998 report, had no violations of toxic criteria in the 46 samples collected at each of the monitoring stations over the 1996-97 period. One of 12 samples analyzed for toxic metals exceeded the chronic WQ criterion for copper (8% violation). 1998 Section 305(b) assessment guidelines allow one violation for toxics in an abundant data set with the water fully supporting designated uses. Eight of 11 samples (73% violation) exceeded the chronic WQ criterion for mercury; due to problems with analysis and with trace levels of toxic metals, did not use these data to develop the assessment. Thus, consider the Class B(WW) aquatic life use as FST. Levels fecal coliform bacteria at both stations indicate NS of the Class A primary contact uses: in the 16 non-flow affected samples collected during summers of 1996 and 97, geometric means at both stations exceeded 200 orgs/100 ml, and 38% of the samples at both stations exceeded 400 orgs/100 ml (see page 3-34 of the 1998 305(b) Guidelines Supplement). Continue to assess support of the fish consumption uses as FST. Results of the 1997 RAFT fish contaminant monitoring program show that the level of tech. chlordane (0.21 ppm) in the composite whole-fish sample of carp was greater than 1/2 of the FDA action level for chlordane (=0.300 ppm). Follow-up monitoring will be conducted as part of future RAFT trend monitoring. Level of mercury (0.198 ppm) was well below 1/2 of the FDA action level of 1.0 ppm.

For the 2000 report: SUMMARY: Continue to assess support of the Class A (primary contact recreation) uses as "not supporting," the Class B(WW) aquatic life uses as "fully supported / threatened," and the fish consumption uses as "fully supported / threatened." EXPLANATION: The assessments of support of the beneficial uses are based primarily on results of water quality monitoring conducted by Iowa State University (under contract with the U.S. Army Corps of Engineers) as part of the Des Moines River Water Quality Study (see Lutz et al. 1999 and Lutz 2000). Monitoring results from ISU/ACOE stations at Des Moines and near Runnells showed that (1) geometric means for fecal coliform (indicator) bacteria in summer periods of 1998 and 1999 were greater than the state WQ criterion of 200 organisms/100 ml and (2) relatively high percentages of samples exceeding the U.S. EPA-recommended single sample maximum value for fecal coliforms (400 orgs/100 ml). At the monitoring station at Des Moines, the geometric mean of the 12 non-runoff-affected samples collected during 1998 and 1999 was 397 orgs/100 ml, with 58% of the samples exceeding the 400 organism/100 ml single sample maximum. Results at the monitoring station near Runnells were somewhat improved but similar, with a geometric mean of 242 orgs/100 ml (n=12) and with 33% of the samples exceeding the 400 organism/100 ml single sample maximum. According to U.S. EPA guidelines for Section 305(b) reporting, geometric means for fecal coliforms that exceed 200 organisms/100 ml indicate nonsupport of primary contact recreation uses (see pgs 3-33 to 3-35 of U.S. EPA 1997b). Sources of these indicator bacteria are believed to be agricultural and urban nonpoint sources, possibly including combined sewer overflows in the Des Moines metropolitan area. Results from the ISU/ACOE monitoring stations at Des Moines and Runnells suggest that the Class B(WW) aquatic life uses are "fully supported/threatened." No violations of Class B(WW) water quality criteria for conventional parameters (dissolved oxygen, pH, ammonia-nitrogen) occurred in the combined 94 samples collected at the two stations during the 1998-99 biennial period. In the nine samples analyzed for toxic metals, the only violations were for mercury: all nine samples analyzed for toxic metals during the 1998-99 biennial period contained levels of dissolved mercury above the Iowa WQ criterion of 0.05 ug/l. Due, however, to (1) problems with analysis of mercury in water (see pages 3-58 and 3-99 to 3-100 of Iowa's 1996 Section 305(b) report) and (2) the historical lack of high levels of mercury in fish tissue samples from this reach of river, data for mercury in water were not used to assess support of the Class B(WW) aquatic life uses of this river reach. In addition, a recent study (Montgomery and Watson 1998) was conducted to determine whether levels of mercury in the vicinity of Des Moines presented a water quality problem. Study results showed that (1) average levels of mercury in the Des Moines River ranged from 2.7 to 2.8 ng/l and were well below the Iowa water quality criterion of 50 ng/l; (2) levels of mercury in effluent of the Des Moines wastewater treatment plant averaged 3.30 ng/l but account for only 1.7 percent of the total river mercury

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load leaving the city of Des Moines, (3) mercury levels in Des Moines River fish (maximum of 0.179 ppm) were well below the FDA action level of 1.0 ppm, (4) most of the mercury loading seen at Des Moines comes from upstream areas in the Des Moines and especially the Raccoon river basins, and (5) river mercury concentrations were strongly correlated to total suspended solids concentrations. Due to continuing uncertainty regarding the significance of mercury levels in the Des Moines River, the assessment of support of the Class B(WW) aquatic life uses was downgraded from "fully supported" to "fully supported / threatened." EPA/DNR fish tissue (RAFT) monitoring in 1997 and 1999 near the Des Moines wastewater treatment plant showed that composite samples of whole-fish common carp contained 0.21 ppm and 0.22 ppm of technical chlordane. Although levels of organochlorine contaminants in whole-fish samples tend to overestimate levels in the edible portion of the fish, these levels of chlordane suggest that levels in edible portions may be greater than 1/2 of the FDA action level (0.30 ppm) for chlordane. Thus, according to DNR's assessment methodology, the fish consumption uses should be assessed as FST. In addition to the RAFT whole-fish carp (trend) monitoring scheduled for 2001, composite samples of fillets will also be collected and analyzed to better determine chlordane levels in the edible portions of fish from this reach of the Des Moines River.

LICK CR

-- mouth (Lee) to headwaters

Waterbody ID No.: IA 04-LDM-0055

Subsegment No.: 0

Subsegment Description: mouth to trib in S32,T68N,R7W Lee Co.

Subsegment Length: 5.8 miles

ASSESSMENT COMMENTS: 1991 SUA: habscr/fshscr=29/9 (seine). 1997 Biocriteria: Fish IBI=48(fair), BM-IBI=42(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
 Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates above avg. habitat quality. Very diverse substr. and numerous pool/riffle sequences observed. Some channelization noted. Abundant rocky substrates as a result of stream downcutting through bedrock. Fair number of fish species found, but low numbers per species. Seining was hindered by abundance of boulders. Stream was viewed at two other locations in B(LR) segment; both sites had above average habitat. No channel alterations noted.

For 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST).

For the 1998 report, used results of the July 1997 DNR biocriteria sampling at the Shimek State Forest, approximately 5 mi SE of Farmington, to assess support of the Class B(LR) aquatic life uses as FS due to (1) presence of a relatively diverse fish community of 17 species from 5 families, (2) presence of all the expected fish taxa (8 of 8) for the Central Irregular Plains ecoregion, (3) presence of above average aquatic habitats, and (4) lack of violations of Class B(LR) WQ criteria. IBI score (34) well above average for other biocriteria reference sites in this ecoregion.

2000 report: The DNR/EPD stream assessment project data collected in 1991 were not used to determine the degree of aquatic life use support for this waterbody segment because the data are more than five years old, and no longer considered current. The assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 48(fair), and the BM-IBI score was 42(fair). The aquatic life use support status was assessed as fully supporting/threatened(=FS/T), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

The majority of the watershed is in Shimek State Forest. Land use impacts, if any, are slight. It is suspected that low flow stability and/or extreme fluctuations in flow are the primary threat to the aquatic community. The stream where sampled is moderately incised, and fairly wide and shallow. Some channelization in headwater reaches was observed, as well as straightening at several bridge approaches. These are most likely not recent modifications to the stream channel, but historical impacts.

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Lower Des Moines River Subbasins

CHEQUEST CR

-- mouth (VanBuren) to headwaters

Waterbody ID No.: IA 04-LDM-0070

Subsegment No.: 0

Subsegment Description: mo-> N Chequest Cr S25,T70N,R13W Wapello

Subsegment Length: 21 miles

ASSESSMENT COMMENTS: 1991 SUAs: habscrs/fshscr (ds->us): 28/9; 23/9; 16/9 (all seine). 1997 Biocriteria: Fish IBI=46(fair), BM-IBI=75(good); 21 spp, 5 fams.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the July 1991 DNR stream use assessments to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat scores at two of three locations (which cover 17 of the 20 miles of designated stream) (28 and 23) better than the overall medians score (22) for DNR stream use assessments and (2) indications on field sheets of diverse substrates, several to numerous pool/riffle sequences, few channel alterations, and relatively stable stream banks. Fish scores (9) for all assessments was poorer than the 75th percentile score for stream assessments made with seines, but field sheets note that presence of rocky substrates and snags hindered seining. Field sheets suggest that habitat quality deteriorates from downstream to upstream, with the poorest quality near the confluence with N. Chequest Cr. Threats to continued support of the aquatic life uses include channel alterations (straightening) and pasturing of riparian areas.

For the 1998 report, used results of the July 1997 DNR biocriteria sampling approximately 2.5 mi NW of Pittsburg in Van Buren County to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of a very diverse fish community for the Central Irregular Plains ecoregion (21 species from 5 families) with relatively large numbers of individuals per species and including sensitive species such as smallmouth bass and orangethroat darter, (2) presence of all expected fish taxa (8 of 8) for streams in the Central Irregular Plains ecoregion, (3) IBI score (36) is the highest of any reference site yet sampled in this ecoregion, and (4) lack of violations of Class B(LR) WQ criteria in the sample collected during the biocriteria sampling. Despite the problems with habitat quality mentioned in the assessment developed for the 1996 Section 305(b) report (see above), habitat scores for nearly the entire Class B(LR) reach were above the overall median habitat scores for DNR stream use assessments conducted between 1990 and 1995, thus suggesting relatively minor impacts to aquatic habitats.

2000 report: The DNR/EPD stream assessment project data collected in 1991 were not used to determine the degree of aquatic life use support for this waterbody segment because the data are more than five years old, and no longer considered current. The assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 46(fair), and the BM-IBI score was 75(good). The aquatic life use support status was assessed as fully supporting (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

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Lower Des Moines River Subbasins

SOAP CR

-- mouth-Jefferson to headwaters

Waterbody ID No.: IA 04-LDM-0090

Subsegment No.: 1

Subsegment Description: mo to L Soap Cr S1,T70N,R13W Davis Co.

Subsegment Length: 43 miles

ASSESSMENT COMMENTS: 1994 SUA: habscr/fshscr: 25/12 (shock; 24 species). 1996 biocriteria: FISH IBI=42 (FAIR) 22 spp., 6 fams.; BM-IBI=56 (GOOD)

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the October 1994 DNR stream use assessment to assess support of the Class B(WW) aquatic life uses as FST due to (1) habitat score (25) better than the overall score (22) for DNR stream use assessments, (2) indications on field sheet of several pool/riffle sequences, only isolated channel alterations, and relatively stable stream banks with timbered riparian zone, (3) very diverse fish community for a southeastern Iowa stream (24 species, 8 families) including a good population of the state-threatened orangethroat darter (approximately 35 collected). Also present were approximately 20 channel catfish and 2 juvenile flathead catfish. Continued support of the aquatic life uses is threatened by hydrologic modification of headwater reaches that have amplified the flood hydrograph for this lower reach of Soap Creek. That is, the primary impact to the reach assessed was the relatively wide and shallow channel (despite the well-vegetated (timbered) stream banks) that has resulted from scouring by high flows. The presence of bedrock outcrops and snags are very important to the habitat quality of this reach.

For the 1998 report, used results of the DNR biocriteria sampling in October 1996 3 mi. SW of Eldon (very near the location of the 1994 DNR stream use assessment) to continue to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of a relatively diverse fish community of 22 species from 6 families, (2) presence of all expected fish taxa (8 of 8) for streams in the Central Irregular Plains ecoregion, and (3) presence of expected game fish species channel catfish) as well as smallmouth bass. As described in the assessment for the 1996 Section 305(b) report (see above), the aquatic habitats in this reach of Soap Creek suffer from hydrologic modification in upstream areas of the watershed that have altered the stream's hydrograph.

2000 report: The DNR/EPD stream assessment project data collected in 1994 were not used to determine the degree of aquatic life use support for this waterbody segment because the data are more than five years old, and no longer considered current. The assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) - 100 (maximum).

The F-IBI score was 42 (fair), and the BM-IBI score was 56 (good). The aquatic life use support status was assessed as fully supporting (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998 (IDNR 2000).

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Lower Des Moines River Subbasins

CEDAR CR

-- mouth-Mahaska to N Cedar Cr

Waterbody ID No.: IA 04-LDM-0160

Subsegment No.: 0

Subsegment Description: mouth to N Cedar Cr S15,T74N,R18W Marion

Subsegment Length: 9.4 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR quarterly monitoring conducted near Bussey in FY 1996-1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates above avg. habitat quality. A diversity of substr. and occasional riffles observed. Much of stream reach assessed was long pools and slow run habitat. Good water depth and structure provided by snags, root wads, and boulders. Old channeliz. and levying evident. Fairly good number of fish species observed. Large volume of water made it difficult to electrofish effectively. Ch. catfish were common. Two juvenile walleye were also captured.

For 1996 report, used assessment of support of the Class B(WW) aquatic life uses developed for the 1994 report (=FST).

For 1998 report, continue to use assessment developed for the 1996 report (FST), plus included results from DNR quarterly WQ monitoring station near Bussey: no violations of WQ criteria for conventional or toxic contaminants in the 8 samples collected during the FY96-97 period; thus, the Class B(WW) aquatic life uses are FST. A review of the field sheet from the June 1992 DNR stream use assessment near Bussey supports this assessment due to (1) presence of a moderately diverse fish community (13 species from 5 families) for streams in the Central Irregular Plains ecoregion (40) and (2) presence of a majority of the expected fish taxa (6 of 8) for streams in this ecoregion. This reach of Cedar Creek was identified in 1992 by DNR Fisheries Biologists as impaired due to impacts from coal mining operations. In addition, Dretroy et al. (1983:40) report pH values of less than 6.0 units for Cedar Creek near Bussey. Despite the potential for impacts due to low pH, the results of the June 1992 DNR stream use assessment suggest a relatively healthy biological community, and recent WQ monitoring near Bussey does not suggest a problem with low pH.

For the 2000 report: continue to assess support of the Class B(WW) aquatic life uses as FST. Fish consumption uses remain "not assessed." EXPLANATION: The assessment of the Class B(WW) uses is based on results of the two years of DNR quarterly monitoring (1996-1997) on the near Bussey (see assessment for the 1998 report above). Results from the DNR stream use assessment conducted in June 1992 are older than five years and are thus considered too old for characterizing current water quality conditions. This assessment was based on results of quarterly monitoring. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Cedar Creek station began in October 1999. Fish consumption uses were not assessed due to lack of fish tissue monitoring in this river reach.

Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins

N CEDAR CR

-- mouth to headwaters

Waterbody ID No.: IA 04-LDM-0180

Subsegment No.: 0

Subsegment Description: mo to Sage Cr S7,T73N,R19W Monroe Co.

Subsegment Length: 18 miles

ASSESSMENT COMMENTS: June 1992 SUA: Habschr/fshscr=22/10 (shock); 1998 Biocriteria: Fish IBI=34(fair), BM-IBI=53(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates below avg. habitat quality. Poor low flow habitat characteristics noted. Fine substr. are dominant. Frequent stream bank erosion was noted. Fairly good number of fish species found, but low numbers per species. Tolerant species were dominant. Sulfide odor detected; suspect a toxicity problem, possibly related to coal strip mine runoff.

For 1996 report, use assessment of support of B(LR) aquatic life uses developed for the 1994 report (PS). Additional study is needed to (1) determine whether the low fish diversity noted in the June 1992 survey was a transient or persisting condition, (2) identify the cause of low diversity, and (3) identify the source of the toxic condition.

For the 1998 report, upgraded the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to misinterpretation of the results of the June 1992 DNR stream use assessment near Bussey. The results of sampling for the fish community (11 spp., 4 fams) show that this stream supports most of the expected fish species/genera for Class B(LR) streams of this region; thus, the Class B(LR) uses are fully supported. Additional monitoring is needed to determine the status of the aquatic communities and habitats, and to determine the significance of comments on the June 1992 field sheet regarding "sulfide odor" and "very few fish found." This stream was identified in 1992 by DNR Fisheries Biologists as having major water quality impacts due to runoff from coal mining operations (see page 3-106 of the 1996 Section 305(b) report). In addition, Detroy et al. (1983:40) identified this stream as having pH values less than 6.0.

2000 report: The DNR/EPD stream assessment project data collected in 1992 were not used to determine the degree of aquatic life use support for this waterbody segment because the data are more than five years old, and no longer considered current. The assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 34(fair), and the BM-IBI score was 53(fair). The aquatic life use support status was assessed as fully supporting /threatened (=FS/T), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998. Stream physical habitat was rated as fairly good in the reach sampled; however, this reach may not be totally representative of the entire 18 mile waterbody segment encompassed by this assessment. The sampling site was located in close proximity to a large, historic strip mine site. There was no evidence of iron precipitates on the stream bottom or sulfide odor to indicate a pH or water toxicity impact associated with mine runoff at the time of sampling.

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Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins

WHITE BREAST CR

-- mo-Marion to L White Breast Cr

Waterbody ID No.: IA 04-LDM-0200

Subsegment No.: 0

Subsegment Description: mo-> Little White Breast Cr, S11,T73,R22 Lucas County

Subsegment Length: 30 miles

ASSESSMENT COMMENTS: Assessment is based on results of two DNR stream use assessments conducted in September 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the three DNR stream use assessments conducted in November 1990 and September 1994 to assess support of the Class B(WW) aquatic life uses as FST due to (1) habitat scores 25, 23 & 23) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of diverse substrates, presence of pool/riffle sequences, and moderately stable stream banks, (3) fish scores (12, 10 & 13) equal to or better than the respective 75th percentile scores for DNR stream use assessments made with seines and electrofishers, and (4) presence of a very diverse fish community (23 and 25 species from 8 families) that includes adult and juvenile channel catfish. Field sheets suggest that continued support of aquatic life uses is threatened by channel alterations (straightening), agricultural nonpoint source runoff, and stream bank erosion. Most of reach in Marion County appears to be extensively channelized. No violations of Class B(WW) water quality criteria in 8 samples collected from 9310 to 9509 at DNR quarterly water quality monitoring station SW of Knoxville.

For the 1998 report, continue to use assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST). A review of the field sheets from the September 1994 DNR stream use assessments in Marion and Warren counties shows that (1) the fish community of this stream contains all, or nearly all (8 of 8; 7 of 8) of the expected fish taxa for streams in the Central Irregular Plains ecoregion (40) and (2) both adults and juveniles of the expected game fish species (channel catfish) are present.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain "fully supported / threatened." The fish consumption uses remain "not assessed." EXPLANATION: The previous assessment of support of the Class B(WW) uses was based on (1) results from the DNR quarterly monitoring station northwest of Knoxville (station 100818) and (2) results of two DNR stream use assessments conducted in September 1994 in Marion and Warren counties. The DNR quarterly station was last monitored from October 1993 through September 1995, and approximately half of the data from this monitoring period are now considered too old (greater than five years) for characterizing current water quality conditions. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Colfax station began in October 1999. Results from this monitoring will allow development of an updated assessment of support of beneficial uses for the 2002 report. The results of the September 1994 DNR stream use assessments upon which the previous assessment of the Class B(WW) uses was primarily based ("fully supported / threatened")-are approximately 5 years old and can be used to assess current water quality conditions. Thus, in the absence of subsequent monitoring in this stream reach, the assessment of support of the Class B(WW) aquatic life uses remains "fully supported / threatened" (see assessments developed for the 1996 and 1998 reports above). The fish consumption uses remain "not assessed" due to a lack of fish tissue monitoring in this stream reach.

Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins**WHITE BREAST CR**

-- L WhiteBreast Cr to headwaters

Waterbody ID No.: IA 04-LDM-0210

Subsegment No.: 0

Subsegment Description: L WhiteBreast ->trib S4,T71N,R24W Clarke

Subsegment Length: 28 miles

ASSESSMENT COMMENTS: Habscrs/fshscrs (dstr->upstr): 22/13 (shock; 13 spp), 21/10 (seine; 6 spp); 26/8 (seine); 20/7 (seine). 1997 Biocriteria: Fish IBI=23(poor), BM-IBI=57(good).SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used the four DNR stream use assessments conducted in November 1990 (3) and September 1994 (1) to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat scores (22, 21, 26 & 20) generally equal to or better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheets of diverse substrates, occurrence of pool/riffle sequences, and reaches with only isolated channel alterations (straightening), (3) comments on field sheets regarding "relatively good habitat," "good depth and tree snag areas; nice habitat for many species," "very nice riffle area approx. 500' long," and (4) moderately diverse fish community: 13 species from 5 families. Field sheet suggests that continued support of the aquatic life uses is threatened by channel alterations (channel straightening).

For the 1998 report, used results of the August 1997 DNR biocriteria sampling approximately 6 miles S of Lacona to update the assessment of support of the Class B(LR) aquatic life uses. Based on results of the biocriteria sampling, continue to assess support of the Class B(LR) uses as FST due to (1) presence of a moderately diverse fish community of 15 species from 4 families, (2) presence of a majority of the expected fish taxa (6 of 8) for streams in the Central Irregular Plains ecoregion, (3) results of the 4 DNR stream use assessments in 1990 and 1994 (see assessment developed for the 1996 report), and (4) lack of violations of Class B(LR) WQ criteria in the sample collected during the biocriteria sampling.

2000 report: The DNR/EPD stream assessment project data collected in 1991 were not used to determine the degree of aquatic life use support for this waterbody segment because the data are more than five years old, and no longer considered current. The assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 23(poor), and the BM-IBI score was 57(good). The aquatic life use support status was assessed as partially supporting (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Despite having moderate richness of fish species, the community index ranking was poor because the majority of fish were tolerant/habitat generalists, primarily consisting of minnow species; sensitive species were absent, and habitat specialists were present in very low numbers. The "good" rating obtained for the benthic macroinvertebrate index suggests that water quality at the time of the assessment was acceptable, and capable of supporting a more balanced and diverse fish community. The habitat assessment rating was in the "fairly good" range suggesting habitat is capable of supporting a better fish community. However, several suboptimal habitat characteristics were observed. The dominant type of substrate was sand, and the channel was relatively wide and shallow. Several sediment bars and areas of raw, eroding banks were noted. The riparian zone at the sampling site was relatively undisturbed, suggesting that sediment and channel erosion sources originate further upstream in the watershed. It is possible that long-term changes in the watershed hydrology and stream channel morphology of the stream have adversely impacted the habitat for fish populations. Additional assessment information is needed to determine the magnitude and extent of impairment. The length of stream that was sampled (<0.25 mile) is very small in relation to the waterbody segment length (28 miles). More assessment data are needed to adequately characterize aquatic life uses throughout the entire segment. Follow-up sampling is needed to determine whether the 1997 sampling results are representative of the fish community.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins

S. WHITEBREAST CR

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 04-LDM-0212-0

Subsegment No.: 0

Subsegment Description: mouth (S3, T71N, R24W, Clarke Co.) to headwaters

Subsegment Length: 14 miles

ASSESSMENT COMMENTS: 1995 Biocriteria: Fish IBI=25 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports.

2000 report: The assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

In this particular stream segment, only fish data were collected and analyzed. The F-IBI score was 25 (fair). The aquatic life use support status was assessed as partially supporting (=PS), based on the F-IBI with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins

WALNUT CR

-- mouth to headwaters

Waterbody ID No.: IA 04-LDM-0227

Subsegment No.: 0

Subsegment Description: mouth (Marion Co.) to headwaters (Jasper Co.)

Subsegment Length: 16 miles

ASSESSMENT COMMENTS: Assessment is based on results of chemical and biological monitoring conducted as part of the Walnut Creek Watershed Restoration project from 1995-1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

This stream is located on the Walnut Creek Wildlife Refuge in Jasper County near Prairie City. This primarily agricultural area was designated in 1990 by the U.S. Congress for restoration and development to presettlement conditions. This stream was sampled in 1991 by the U.S. Fish and Wildlife Service and in 1994-1995 as part of the U.S. EPA-sponsored Tri-State Ecoregion study. The Walnut Creek Watershed Restoration and Water Quality Monitoring Project, conducted by the DNR Geological Survey Bureau in cooperation with the University of Iowa Hygienic Laboratory, began in April 1995 and is to end in 1998. The goal of the project is to evaluate water quality changes related to watershed habitat restoration and agricultural management changes as the watershed is restored from row crop agriculture to native prairie by the U.S. Fish & Wildlife Service. This assessment is based on results of the DNR GSB/UHL monitoring from 1995 through 1997. Monitoring thus far has shown that (1) atrazine is the most frequently detected pesticide, with most levels below the MCL of 3.0 ug/l, (2) levels of nitrate are high but typical for streams in Iowa, with average levels at or above the 10 mg/l MCL [this stream is not designated for Class C (drinking water) uses; thus, the 10 mg/l MCL does not apply when developing Section 305(b) water quality assessments], (3) the macroinvertebrate community has low diversity that compares unfavorably with other streams that have been evaluated in the same ecoregion (47f), and (4) the fish community is dominated by the expected taxa that are tolerant of a wide range of environmental conditions with from 10 to 15 species captured in sampling years 1995, 1996 and 1997. Based on the above results of DNR-GSB/UHL sampling, & based on results of the August 1992 DNR stream use assessments at three locations that showed aquatic habitats and flow conditions were not capable of supporting the Class B(LR) aquatic life use designation, this stream appears to support the environmentally tolerant types of aquatic life typical of Iowa streams classified only for general uses. Thus, the general use aquatic life uses of this stream were assessed as "fully supported" for the 1998 Section 305(b) report.

For the 2000 report: SUMMARY: The general uses of this stream remain assessed as "fully supported." EXPLANATION: This assessment is based on a review of the summary of water quality data from Schilling and Thompson (1999). Approximately 30 samples were collected during water years 1996 and 1997 from each of the two mainstem sites on Walnut Creek (stations WNT1 and WNT2). None of the levels of dissolved oxygen, pH, or ammonia-nitrogen in the samples from these stations suggest the occurrence of acutely toxic conditions in this general use stream reach (although samples from one mainstem tributary site (WNT6) showed that levels of dissolved oxygen were at least occasionally less than 4.0 mg/l). Thus, despite indications of below average communities of fish and benthic macroinvertebrates (see Shilling and Thompson 1999, pages 43 and 47), results of water quality monitoring do not suggest any violations of general water quality criteria in Walnut Creek as described in the Iowa Water Quality Standards. General use streams typically lack the flow stability and quality of aquatic habitats to support diverse aquatic communities. The occurrence of environmentally tolerant forms of fish and aquatic macroinvertebrates in Walnut Creek is thus consistent with its classification only for "general uses."

Rivers and Streams: Des Moines River Basin

*Lower Des Moines River Subbasins***MIDDLE R**

-- mouth (Warren) to Clanton Cr.

Waterbody ID No.: IA 04-LDM-0270

Subsegment No.: 0

Subsegment Description: mo-> Clanton Cr S28,T76N,R25W Warren Co.

Subsegment Length: 26 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR quarterly water quality monitoring 4 mi N of Indianola during FY98 and FY99. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had no violations of Class B(WW) WQC and had moderately diverse fish communities at stations sampled; thus assessed as FST.

For 1994 report, used same assessment. For 1996 report, reviewed assessment developed in 1992 and used for 1994 report. Only one of the DNR fish surveys from Oct 1990 was conducted in this reach (18 spp; 7 families). In addition, Harlan et al. (1987: 12) note that the entire lower reach of the Middle River has been channelized and offers poorer fishing than the naturally meandering reaches upstream. Thus, for 1996 report, change assessment of support of the Class B(WW) aquatic life uses from FST to PS for reasons stated above. The October 1990 DNR fish survey showed good diversity of fish species, including channel catfish. The best aquatic habitats were pools at snags. Field notes for this survey note considerable re-meandering in the channel. Existence of mature trees in the riparian corridor of this reach of the Middle River is important for both bank stability and for contributions of woody debris that forms snags.

For the 1998 report, continue to use assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=PS). Data from the DNR quarterly monitoring station are well over five years old and are thus of little use for assessing status of water quality (this station is to be monitored again from October 1997 through September 1999). Follow-up monitoring is needed to determine the status of the aquatic communities and habitats and to determine the degree to which the Class B(WW) uses may be impaired.

For the 2000 report: **SUMMARY:** Assessed support of the Class B(WW) aquatic life uses as "fully supported / threatened." Fish consumption uses were not assessed. **EXPLANATION:** Results of quarterly water quality monitoring during the 1998-1999 biennial period at the DNR station located approximately 4 miles NNW of Indianola (station 200551) showed no violations of criteria to protect the Class B(WW) aquatic life uses: no violations of Class B(WW) criteria for conventional or toxic parameters (dissolved oxygen, pH, and ammonia-nitrogen) occurred in the 8 samples collected during this monitoring period; neither of the two samples analyzed for toxic metals showed violations of Class B(WW) chronic criteria. As noted in previous assessments, however, this portion of the Middle River has been extensively channelized and, based on a 1992 DNR stream use assessment, has been presumed to only "partially support" its aquatic life uses in past WQ assessments due to habitat alterations caused by hydromodification (channelization) (see above). Results from the 1992 stream assessment, however, are more than five years old and are now considered too old for characterizing current water quality conditions. Thus, the assessment for the 2000 report was based primary on results of chemical monitoring at the Indianola station, and the assessment of the Class B(WW) aquatic life uses was changed from "partially supported" to "fully supported / threatened." Although water quality conditions appear to fully support the designated aquatic life uses, follow-up biological monitoring is needed to determine the status of the aquatic communities and habitats and to determine the degree to which the Class B(WW) uses are supported. This assessment was based on results of quarterly monitoring. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Indianola station began in October 1999. The fish consumption uses remained "not assessed" due to the lack of fish tissue monitoring in this river reach.

Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins

MIDDLE R

-- Clanton Creek to headwaters

Waterbody ID No.: IA 04-LDM-0280

Subsegment No.: 1

Subsegment Description: Clanton Cr->Bush Br S8,T75N,R29W Madison

Subsegment Length: 89 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) DNR/UHL biocriteria sampling in 1998 (Fish IBI= 46(fair), BM-IBI= 60(good) and (2) fish tissue (RAFT) monitoring at Pammell Park in 1996. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates above avg. habitat quality. Very diverse substr. and good pool/riffle sequences observed. Max. depth in pools unknown - too deep to wade. Good diversity of depth, current velocity, and substr. should support a productive and diverse aquatic community. Moderate diversity of fish observed including ch. catfish. Too much water was present to electrofish effectively. River was sampled for RAFT in 1990 and 1991: levels of tech. chlordane in 1991 sample = 0.210 ppm; follow-up in 1991 showed < 0.050 ppm; thus, assess as FST.

For 1996 report, used assessment of support of the Class B(WW) aquatic life uses developed for the 1994 report (=FST). Although not considered in the 1994 use support assessment, results of four DNR fish surveys in October 1990 also support the FST assessment of the aquatic life uses.

For 1998 report, continue to use assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST). Results of fish tissue (RAFT) monitoring in 1996 show all levels of contaminants less than 1/2 FDA action levels, thus suggesting full support of the fish consumption uses (RAFT samples collected at Pammel State Park). These results show an improvement over RAFT sampling in 1991 which showed levels of chlordane > 1/2 the FDA action level.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were assessed as "fully supported / threatened." Fish consumption uses remain assessed as "fully supported." EXPLANATION: The previous assessment of support of the Class B(WW) uses was based on results DNR fish surveys conducted in Madison County in October 1990. The results of these surveys are now considered too old (greater than five years) to be useful for assessing current water quality conditions. The current assessment is based on results of a DNR/UHL biocriteria sampling of fish and benthic macroinvertebrates in 1998. Based on a comparison to results of ecoregion reference site sampling, the fish community was rated "fair" (Fish IBI=46) while the benthic macroinvertebrate community was rated "good" (MB IBI=60). These results suggest that the Class B(WW) uses are "fully supported / threatened." Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1996 that showed levels of all contaminants in the composite sample of fillets from channel catfish were less than 1/2 of the respective FDA action levels and DNR levels of concern (see assessment developed for the 1998 report above).

Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins

NORTH R

-- mouth-Polk to N Br North R

Waterbody ID No.: IA 04-LDM-0300

Subsegment No.: 2

Subsegment Description: CoRd R-63 to Badger Cr S33,T77N,R33W, Warren Co.

Subsegment Length: 49 miles

ASSESSMENT COMMENTS: Assessment is based on (1) results of DNR monthly monitoring SE of Norwalk and (2) 1998 DNR/UHL biocriteria sampling (Fish IBI= 20(poor), BM-IBI= 60(good)). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report, no violos of any Class B WQC during the biennial period, but overall assessment set at FST due to known threats from agricultural nonpoint sources.

For 1996 report, no violations of any Class B WQ criteria during reporting periods. Continue to assess as FST due to presumed threats from NPS pollution. Also, used the results of the September 1990 DNR stream use assessment to assess support of the Class B(WW) aquatic life uses as FST due to lack of channel alterations, presence of deep pools (too deep to wade), well-timbered riparian area with relatively stable stream banks, and a moderately diverse fish community (9 species; 4 families) that includes channel catfish. Field sheets suggest that continued support of the aquatic life uses is threatened by excessive siltation due to stream bank erosion and due to delivery of sediment in nonpoint source runoff.

For 1998 report, used results of DNR monthly monitoring station SE of Norwalk to assess support of the Class B(LR) aquatic life uses as FST due to lack of violations of WQ criteria for toxic and conventional pollutants in the 24 samples collected during the Oct 95-Sept 97 period. A review of the field sheet from the September 1990 DNR stream use assessment shows that a slight majority of the expected fish taxa (5 of 8) for streams in the Mississippi River portion of the Southern Iowa Rolling Loess Prairies subecoregion (47f) were present as was the expected game fish species (channel catfish). The data upon which this assessment is based are more than 5 years old. Additional monitoring is needed to update this assessment and to determine the status of the aquatic communities and habitats.

For the 2000 report: SUMMARY: Assessed support of the Class B(WW) aquatic life uses as "partially supported." Fish consumption uses were "not assessed." EXPLANATION: Results of the DNR stream assessment conducted in September 1990-upon which the previous assessment of the Class B(WW) uses was primarily based-are now considered too old (greater than five years) to be useful for assessing current water quality conditions. Thus, the assessment of the Class B(WW) uses was based on (1) results of monthly chemical monitoring at the Norwalk station during the 1998-1999 biennial period and (2) a 1998 sampling of fish and benthic macroinvertebrates as part of the DNR/UHL biocriteria project. Results of DNR monthly (chemical) monitoring showed no violations of Class B(WW) (aquatic life) water quality criteria in the 24 samples analyzed for dissolved oxygen, pH, and ammonia, and in the two samples analyzed for toxic metals. Despite the apparently good chemical water quality, results of biological sampling suggest an impairment of the aquatic life uses. Based on results of regional reference site sampling, the fish community was rated "poor" (fish IBI=20) while the benthic macroinvertebrate community was rated "good" (BM IBI=60). Based on the relatively poor-quality fish community, the Class B(WW) aquatic life uses were assessed as "partially supported." Fish consumption uses were not assessed due to lack of fish tissue monitoring in this river reach.

Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins

NORTH R, N BR

-- mouth (Madison) to headwaters

Waterbody ID No.: IA 04-LDM-0315

Subsegment No.: 0

Subsegment Description: mouth to trib S5,T77N,R29W Madison Co.

Subsegment Length: 26 miles

ASSESSMENT COMMENTS: Habscrs/fshscrs=26/14, 31/12 (seine), 26/12 (shock); 1994-1997 Biocriteria: Avg. Fish IBI= 42(fair), Avg. BM-IBI= 75(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. forms indicate above average habitat quality Some diversity of substr. and several pool/riffle sequences resulting from stream intercepting limestone bedrock. Stream is mostly meandering with some channeliz. near bridges. Rel. good diversity of fish species observed including good population of juvenile ch. catfish at one location.

For the 1996 report: Used data from seasonal biocriteria sampling site to make use support determination. Habitat and fish metrics from stream use assessment protocol were applied to the data.

For the 1998 report, used results of four DNR biocriteria samplings at the seasonal site 4.5 mi SE of Earlham in Madison County to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a majority (6 of 8) of the expected fish taxa for streams in the portion of the Southern Iowa Rolling Loess Prairies subcoregion in the Mississippi River drainage, (2) lack of violations of Class B(LR) water quality criteria in the samples collected during biocriteria sampling, and (3) presence of moderately diverse fish community for the subcoregion of from 11 to 13 species from 3 families.

For the 2000 report, the assessment was based on results of multiple samplings conducted from 1994-1997 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The average F-IBI score was 42 (fair) and the average BM-IBI score was 75 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

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Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins

HOWERDON CR

-- mouth (Madison) to headwaters

Waterbody ID No.: IA 04-LDM-0318

Subsegment No.: 0

Subsegment Description: mouth to trib S25,T76N,R29W Madison Co.

Subsegment Length: 5.7 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR/UHL biocriteria monitoring in June 1995. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates above avg. habitat quality. Some diversity of substr. and several pool/riffle sequences a result of stream downcutting into bedrock. Good depth in pools noted. Timber riparian vegetation provides shade to stream. Rel. good diversity of fish species observed, including first record of s.m. bass in Madison County.

For the 1996 report: Used data from 1995 biocriteria site for use support determination. Same location as stream use assessment site. Habitat and fish results were similar.

For the 1998 report, used a review of the field sheet from the September 1992 DNR stream use assessment in Madison County to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of a relatively diverse fish community (12 species from 4 families (14 species from 4 families for the 1995 biocriteria sampling)) for streams in the Mississippi River portion of the Southern Iowa Rolling Loess Prairies subcoregion (47f), (2) presence of nearly all the expected fish taxa (7 of 8) for streams in this subcoregion, and (3) presence of high quality physical characteristics and aquatic habitats in this stream.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 49 (fair) and the BM-IBI score was 62 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Des Moines River Basin

Lower Des Moines River Subbasins

YEADER CR

-- mouth to headwaters

Waterbody ID No.: IA 04-LDM-0340

Subsegment No.: 0

Subsegment Description: mouth (at Easter Lake) to Fleur Drive near Des Moines airport, Polk C

Subsegment Length: 3.5 miles

ASSESSMENT COMMENTS: Assessment is based on results of chemical and biological monitoring conducted in April 1997 by DNR staff (FO5 & WQ Bureau). Recent volunteer monitoring suggests some WQ improvement. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 or 1996 reports.

For the 1998 report, this general use stream was assessed as not supporting its general aquatic life use due to runoff of de-icing agents (propylene glycol and ethylene glycol) from the Des Moines Airport. An investigation of the aquatic life of this stream was conducted on April 4, 1997, by DNR staff from Field Office 5, Wastewater Section, and Water Resources Section. This investigation showed that Yeader Creek near Fleur Drive was nearly devoid of aquatic life, and the condition of the substrate suggested anoxic conditions. Previous sampling by FO5 staff showed the following for Yeader Creek near Fleur Drive: February 27, 1997: ethylene glycol from 65 to 120 mg/l; propylene glycol from 210 to 490 mg/l, and a total biochemical oxygen demand (5-day) of from 350 to 1,200 mg/l). The two downstream locations observed (SW 14th Street and South Union Street) continued to have water with a greenish cast with an odor or sewage and sweetener; no biological sampling was conducted at these downstream sites. The only other recent survey of Yeader Creek was conducted in 1990 by the University of Iowa Hygienic Laboratory (Report 91-2). Sampling was conducted during runoff events of March and June 1990; biological sampling was not conducted. Sampling at the SW 13th and McKinley street bridges showed elevated levels of suspended solids, turbidity, TKN, and total phosphorus. High levels of fecal coliform bacteria in the June samples were attributed to possible cross-connected storm sewers and/or septic tanks. DNR met with DM Airport representatives in October 1997 to discuss NPDES permit requirements related to this pollution problem. Conditions in this stream violate several of the general use water quality criteria in the Iowa Water Quality Standards: (1) general use waters are to be free from materials attributable to wastewater discharges or agricultural practices that (1) produce objectionable color, odor, or other aesthetically objectionable conditions and (2) are acutely toxic to human, animal, or plant life (IAC 1990, Chapter 61.3(2).

For the 2000 report: SUMMARY: The general uses remained assessed as "not supported." EXPLANATION: Continue to base this assessment on results of DNR monitoring in April 1997. Volunteer monitoring efforts conducted as part of the Izaak Walton League's "Save our Streams" program have shown some potential improvement in water quality conditions of this stream during 1999 and 2000, even during the critical winter months when runoff of de-icing agents from the Des Moines Airport is most likely to occur. The volunteer monitoring efforts on this stream are to continue.

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin**RACCOON R**

-- mouth to confluence of N&S Raccoon

Waterbody ID No.: IA 04-RAC-0010

Subsegment No.: 1

Subsegment Description: mouth to Polk/Dallas county line

Subsegment Length: 30 miles

ASSESSMENT COMMENTS: Assessment is based on (1) results of monitoring by Iowa State Univ. for the ACOE Des Moines R./Saylorville Res./Red Rock Res. WQ project and (2) fish tissue (RAFT) monitoring in 1999. See attached document.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not supporting
Drinking Water Supply	-- Not supporting		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, 6 of 10 samples collected at approx. average flows had levels of fecal coliforms that exceeded the Class A WQC (60% violation = NS). Class C use was assessed as NS due to frequent DW advisories issued by city of Des Moines due to high levels of nitrate in river (21 of 76 samples contained NO₃ > 10 mg/l). No violations of Class B WQC (=FST).

For 1994 report, 5 of 7 samples collected at approx average flows exceeded Class A WQC for fecal coliforms. Due to lack of complete data, use PBJ to assess support of Class A use as PS. Class C use was assessed as PS: 25 of 63 samples contained NO₃ at > 10 mg/l, but mean NO₃ level was 8.7 (=FS). Installation of nitrate removal system by city of Des Moines, however, suggests that Class C uses should be assessed as PS.

For 1996 report, had 14 of 18 non runoff-affected samples in violation of Class A WQ criterion (=78% viol =NS). Only violations of Class B WQ criteria was mercury: 6 of 9 samples collected over 3 years exceeded the Class B WQ criterion (= 67% viol). Due to problems with mercury analysis, and due to recommend in 305(b) guidelines (1996: 5-18) regarding reliability of toxics data < 1 ppb., these violations are not considered in the assessment. Thus, Class B uses assessed as FST due to presumed impacts from NPS. For Class C use, 14 of 68 samples had NO₃ > 10 mg/l (= 20% viol). Although both mean (7.45 mg/l) and median (7.5 mg/l) levels of NO₃ were < 10 mg/l, assess as PS due to installation of nitrate removal system by DM W.Works.

For 1998 report, had 6 of 14 non-runoff affected samples in viol of Class A WQ criterion. According to Section 305(b) guidelines, (p. 3-34)the geometric mean of 241 organisms/100 ml and 29% of samples >400 organisms/100 ml suggests nonsupport of Class A uses. Sources of fecals include agriculture & wildlife. No viols of Class B(WW) WQ criteria for conventional pollutants in 46 samples collected during the 1996-97 period. Nine of 11 samples exceeded the chronic WQ criterion for mercury; however, due to problems with mercury analysis, disregarded data for assessment purposes. For Class C use, 24 of 67 samples collected from 1995-97 exceeded the nitrate MCL (=36%); mean/median NO₃=7.66/7.77 mg/l. Based on Section 305(b) guidelines for assessing support of drinking water uses (page 3-44), the use of the nitrate removal system by the DMWW constitutes "more than conventional treatment" and indicates that the designated drinking water use is partially supported (PS). Results of 1993 RAFT show no fish contaminants > 1/2 FDA action levels; fish cons. uses = FS.

For the 2000 report: SUMMARY: Continue to assess support of the Class A (primary contact recreation) uses as "not supported" and the Class B(WW) aquatic life uses as fully supported/threatened. The assessment for Class C (drinking water) uses remain assessed as "not supported." Fish consumption uses remain assessed as fully supported. EXPLANATION: The assessments of support of the beneficial uses are based primarily on results of water quality monitoring conducted by Iowa State University (under contract with the U.S. Army Corps of Engineers) as part of the Des Moines River Water Quality Study (see Lutz et al. 1999 and Lutz 2000). Results from the ISU/ACOE monitoring station located at Van Meter continue to suggest that Class A uses are not supported. A total of 18 samples were analyzed for levels of indicator bacteria (fecal coliforms) during summers of 1998 and 1999. The geometric mean of fecal coliform bacteria in the 10 non-runoff-affected samples collected during this period (453 orgs/100 ml) is well above the state WQ criterion of 200 orgs/100 ml, and well over 10% of these samples (50%) exceeded the EPA-recommended single sample maximum value of 400 orgs/100 ml. Thus, according to U.S. EPA guidelines for Section 305(b) reporting (see U.S. EPA 1997b, pages 3-33 to 3-35), the monitoring results from the Van Meter station suggest nonsupport of the designated primary contact recreation uses. Results from this monitoring station suggest that the Class B(WW) aquatic life uses are fully supported/threatened (=FST). No violations of Class B(WW) water quality criteria for conventional parameters (dissolved oxygen, pH, and ammonia-nitrogen) occurred in the 47 samples collected at this monitoring station during the 1998-99 biennial period. In the nine samples analyzed for toxic metals, the only violations were for mercury: all nine samples analyzed for toxic metals during the 1998-99 biennial period contained levels of dissolved mercury above the Iowa WQ criterion of 0.05 ug/l. Due, however, to (1) problems with analysis of mercury in water (see pages 3-58 and 3-99 to 3-100 of Iowa's 1996 Section 305(b) report) and (2) the historical lack of high levels of mercury in fish tissue samples from this reach of river, data for mercury in water were not used to assess support of the Class B(WW) aquatic life uses of this river reach. In addition, a recent study (Montgomery and Watson 1998) was conducted to determine whether levels of mercury in the vicinity of Des Moines presented a water quality problem. Study results showed that (1) average levels of mercury in the Des Moines River ranged from 2.7 to 2.8 ng/l and were well below the Iowa water quality criterion of 50 ng/l; (2) levels of mercury in effluent of the Des Moines wastewater treatment plant averaged 3.30 ng/l but account for only 1.7 percent of the total river mercury load leaving the city of Des Moines, (3) mercury levels in Des Moines River fish (maximum of 0.179 ppm) were well below the FDA action level of 1.0 ppm, (4) most of the mercury loading seen at Des Moines comes from upstream areas in the Des Moines and especially the Raccoon river basins, and (5) river mercury concentrations were strongly correlated to total suspended solids concentrations. Due to continuing uncertainty regarding the

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

significance of mercury levels in the Des Moines and Raccoon rivers near Des Moines, the assessment of support of the Class B(WW) aquatic life uses was downgraded from "fully supported" to "fully supported / threatened." The level of use support for the Class C (drinking water) uses remained assessed as "not supporting" due to (1) results from the ISU/ACOE monitoring station that show that 15 of the 47 samples (32%) collected during the 1998-99 biennial period contained nitrate above the 10 mg/l MCL, (2) DNR's assessment methodology that states that greater than 25% violation of the nitrate MCL suggests nonsupport of drinking water uses, and (3) use of a nitrate removal system by the Des Moines Water Works (based on Section 305(b) guidelines (page 3-44 of U.S. EPA 1997b), the use of the nitrate removal system by the DMWW constitutes "more than conventional treatment" and indicates that the designated drinking water use is partially supported (=impaired). For more information on ISU/ACOE water quality monitoring in this river reach, see Lutz et al. (1999) and Lutz (2000). EPA/DNR fish tissue (RAFT) monitoring conducted near Booneville in 1999 showed that levels of contaminants in the composite sample of carp filets were less than 1/2 of the respective FDA action levels and DNR levels of concern for organochlorine contaminants and mercury. Thus, fish consumption uses were assessed as "fully supported."

Rivers and Streams: Des Moines River Basin

*Raccoon River Subbasin***RACCOON R**

-- mouth to confl of N&S Raccoon

Waterbody ID No.: IA 04-RAC-0010

Subsegment No.: 2

Subsegment Description: Polk/Dallas line to confluence of N&S Raccoon rivers

Subsegment Length: 30 miles

ASSESSMENT COMMENTS: Assessment is based on (1) results of monitoring by Iowa State Univ. for the ACOE Des Moines R./Saylorville Res./Red Rock Res. WQ project and (2) fish tissue (RAFT) monitoring in 1999. See attached document.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recreational)	-- Not supporting
Drinking Water Supply	-- Not supporting		

BASIS FOR ASSESSMENT AND COMMENTS:

Same comments as prepared for Raccoon River waterbody segment 04-RAC-0010-1 (mouth to Polk/Dallas county line).

For 1992 report, 6 of 10 samples collected at approx. average flows had levels of fecal coliforms that exceeded the Class A WQC (60% violation = NS). Class C use was assessed as NS due to frequent DW advisories issued by city of Des Moines due to high levels of nitrate in river (21 of 76 samples contained NO₃ > 10 mg/l). No violations of Class B WQC (=FST).

For 1994 report, 5 of 7 samples collected at approx average flows exceeded Class A WQC for fecal coliforms. Due to lack of complete data, use PBJ to assess support of Class A use as PS. Class C use was assessed as PS: 25 of 63 samples contained NO₃ at > 10 mg/l, but mean NO₃ level was 8.7 (=FS). Installation of nitrate removal system by city of Des Moines, however, suggests that Class C uses should be assessed as PS.

For 1996 report, had 14 of 18 non runoff-affected samples in violation of Class A WQ criterion (=78% viol =NS). Only violations of Class B WQ criteria was mercury: 6 of 9 samples collected over 3 years exceeded the Class B WQ criterion (= 67% viol). Due to problems with mercury analysis, and due to recommend in 305(b) guidelines (1996: 5-18) regarding reliability of toxics data < 1 ppb., these violations are not considered in the assessment. Thus, Class B uses assessed as FST due to presumed impacts from NPS. For Class C use, 14 of 68 samples had NO₃ > 10 mg/l (= 20% viol). Although both mean (7.45 mg/l) and median (7.5 mg/l) levels of NO₃ were < 10 mg/l, assess as PS due to installation of nitrate removal system by DM W.Works.

For 1998 report, had 6 of 14 non-runoff affected samples in viol of Class A WQ criterion. According to Section 305(b) guidelines, (p. 3-34) the geometric mean of 241 organisms/100 ml and 29% of samples > 400 organisms/100 ml suggests nonsupport of Class A uses. Sources of fecals include agriculture & wildlife. No viols of Class B(WW) WQ criteria for conventional pollutants in 46 samples collected during the 1996-97 period. Nine of 11 samples exceeded the chronic WQ criterion for mercury; however, due to problems with mercury analysis, disregarded data for assessment purposes. For Class C use, 24 of 67 samples collected from 1995-97 exceeded the nitrate MCL (=36%); mean/median NO₃=7.66/7.77 mg/l. Based on Section 305(b) guidelines for assessing support of drinking water uses (page 3-44), the use of the nitrate removal system by the DMWW constitutes "more than conventional treatment" and indicates that the designated drinking water use is partially supported (PS). Results of 1993 RAFT show no fish contaminants > 1/2 FDA action levels; fish cons. uses = FS. Waterbody included on Iowa's 1998 Section 303(d) list due to high levels of nitrate and indicator bacteria.

For the 2000 report: SUMMARY: Continue to assess support of the Class A (primary contact recreation) uses as "not supported" and the Class B(WW) aquatic life uses as fully supported/threatened. The assessment for Class C (drinking water) uses remain assessed as "not supported." Fish consumption uses remain assessed as fully supported. These assessments are the same as those for the downriver segment of the Raccoon River (IA 04-RAC-0010-1). EXPLANATION: The assessments of support of the beneficial uses are based primarily on results of water quality monitoring conducted by Iowa State University (under contract with the U.S. Army Corps of Engineers) as part of the Des Moines River Water Quality Study (see Lutz et al. 1999 and Lutz 2000). Results from the ISU/ACOE monitoring station located at Van Meter continue to suggest that Class A uses are not supported. A total of 18 samples were analyzed for levels of indicator bacteria (fecal coliforms) during summers of 1998 and 1999. The geometric mean of fecal coliform bacteria in the 10 non-runoff-affected samples collected during this period (453 orgs/100 ml) is above the state WQ criterion of 200 orgs/100 ml, and well over 10% of these samples (50%) exceeded the EPA-recommended single sample maximum value of 400 orgs/100 ml. Thus, according to U.S. EPA guidelines for Section 305(b) reporting (see U.S. EPA 1997b, pages 3-33 to 3-35), the monitoring results from the Van Meter station suggest nonsupport of the designated primary contact recreation uses. Results from this monitoring station suggest that the Class B(WW) aquatic life uses are fully supported/threatened (=FST). No violations of Class B(WW) water quality criteria for conventional parameters (dissolved oxygen, pH, and ammonia-nitrogen) occurred in the 47 samples collected at this monitoring station during the 1998-99 biennial period. In the nine samples analyzed for toxic metals, the only violations were for mercury: all nine samples analyzed for toxic metals during the 1998-99 biennial period contained levels of dissolved mercury above the Iowa WQ criterion of 0.05 ug/l. Due, however, to (1) problems with analysis of mercury in water (see pages 3-58 and 3-99 to 3-100 of Iowa's 1996 Section 305(b) report) and (2) the historical lack of high levels of mercury in fish tissue samples from this reach of river, data for mercury in water were not used to assess support of the Class B(WW) aquatic life uses of this river reach. In addition, a recent study (Montgomery and Watson 1998) was conducted to determine whether levels of mercury in the vicinity of Des Moines presented a water quality problem. Study results showed that (1) average levels of mercury in the Des Moines River ranged from 2.7 to 2.8 ng/l and were well below the Iowa water quality criterion of 50 ng/l; (2) levels of mercury in effluent of the Des Moines wastewater

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

treatment plant averaged 3.30 ng/l but account for only 1.7 percent of the total river mercury load leaving the city of Des Moines, (3) mercury levels in Des Moines River fish (maximum of 0.179 ppm) were well below the FDA action level of 1.0 ppm, (4) most of the mercury loading seen at Des Moines comes from upstream areas in the Des Moines and especially the Raccoon river basins, and (5) river mercury concentrations were strongly correlated to total suspended solids concentrations. Due to continuing uncertainty regarding the significance of mercury levels in the Des Moines and Raccoon rivers near Des Moines, the assessment of support of the Class B(WW) aquatic life uses was downgraded from "fully supported" to "fully supported / threatened." The level of use support for the Class C (drinking water) uses remained assessed as "not supporting" due to (1) results from the ISU/ACOE monitoring station that show that 15 of the 47 samples (32%) collected during the 1998-99 biennial period contained nitrate above the 10 mg/l MCL, (2) DNR's assessment methodology that states that greater than 25% violation of the nitrate MCL suggests nonsupport of drinking water uses, and (3) use of a nitrate removal system by the Des Moines Water Works (based on Section 305(b) guidelines (page 3-44 of U.S. EPA 1997b), the use of the nitrate removal system by the DMWW constitutes "more than conventional treatment" and indicates that the designated drinking water use is partially supported (=impaired). For more information on ISU/ACOE water quality monitoring in this river reach, see Lutz et al. (1999) and Lutz (2000). EPA/DNR fish tissue (RAFT) monitoring conducted near Booneville in 1999 showed that levels of contaminants in the composite sample of carp fillets were less than 1/2 of the respective FDA action levels and DNR levels of concern for organochlorine contaminants and mercury. Thus, fish consumption uses were assessed as "fully supported."

WALNUT CR

-- mouth (Polk) to headwaters

Waterbody ID No.: IA 04-RAC-0020

Subsegment No.: 1

Subsegment Description: mouth to I-35/80 S33,T79N,R25W Polk Co.

Subsegment Length: 11 miles

ASSESSMENT COMMENTS: Assessment is based on results of a DNR/UHL biocriteria sampling in 1998 (fish IBI= 48 (fair), BM-IBI= 53 (fair)). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. forms indicate fairly good habitat quality. A moderate amount of substr. diversity and pool/riffle formation observed. Fairly meandering channel with pretty good riparian conditions. Fairly good diversity of fish species observed representing several trophic niches.

For 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST). No information available for assessing support of the Class A (swimmable) uses.

For the 1998 report, used a review of the field sheets from the two August 1991 DNR stream use assessments in Polk County to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence or relatively diverse fish communities at both assessment sites (species/families: 15/3, 16/4) for streams in the Des Moines Lobe subcoregion (47b), (2) presence of a majority of the expected fish taxa (8 of 11 and 9 of 11) for streams in this subcoregion, and (3) lack of indications on field sheets of major threats to either the physical characteristics or aquatic habitats of the stream. Data upon which this assessment is based are more than 5 years old. Additional monitoring is needed to update this assessment and to determine the status of the aquatic communities and habitats. No information available for developing an assessment of support of the Class A primary contact recreation uses (although the Des Moines Water Works has conducted sampling for bacteria in Walnut Creek).

For the 2000 report: The Class A (primary contact recreation) uses remained "not assessed." The Class B(LR) aquatic life uses were assessed as "partially supported." EXPLANATION. The Class A uses remained "not assessed" due to lack of data for indicator bacteria. This stream reach has not been routinely monitored for indicator bacteria. The Des Moines Water Works conducted special sampling for E. coli on Walnut Creek following several rainfall runoff events during 1997 and 1998; the results of this sampling showed very high levels of E. coli following rainfall events. According to the Iowa Water Quality Standards, however, the criterion for indicator bacteria in Iowa's Class A waters does not apply "when the waters are materially affected by surface runoff." Thus, the data from the Des Moines Water Works are of marginal use for developing an assessment of support for the Class A uses of this stream. The Class B(LR) uses were assessed as "partially supported" due to results of a DNR/UHL biocriteria sampling in 1998. Compared to results of Iowa ecoregion reference site sampling, both the fish and benthic macroinvertebrate communities were rated only "fair" (fish IBI= 48; BM IBI = 53). Thus, the Class B(LR) aquatic life uses were assessed as "partially supported."

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin**N RACCOON R**

-- Buttrick Cr-> Cedar Cr, Sac Co

Waterbody ID No.: IA 04-RAC-0040

Subsegment No.: 2

Subsegment Description: Hwy 286 at Lanesboro to Cedar Cr, Sac Co

Subsegment Length: 81 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR monthly water quality monitoring downstream from Sac City. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, 6 of nine samples collected at approx average flow exceeded the Class A WQC (= 67% =NS). Also had high freq. of violations for 1990 report, and same sources and magnitudes were used. No violations of Class B WQC.

For 1994 report, had 1 violation of acute Class B(WW) TRC WQC in 36 samples (80 ug/l vs WQC of 35 ug/l) (=FST); no other violations of Class B(WW) WQC. Four of 7 samples collected at approx average flows had levels of fecal coliforms > Class A WQC (=57%). Due to lack of complete data (N=8), use BPJ to assess support of Class A use as PS. For 1996 report, had 1 violation (same sample as for 1994 report) of acute Class B(WW) TRC WQ criterion in the 35 samples collected over 3 years; no other violations of Class B WQC; thus assess aquatic life use as FST. Had relatively large number of samples that violated the Class A WQ criterion for fecal coliform bacteria: 10 of 13 non flow-affected samples exceeded the Class A WQC (=77% viol =NS). Levels of fecals in samples from July thru October 1994 were well above WQC (81,000, 690, 7,700, and 2,800); most other violations less than 350 orgs/100 ml.

For the 1998 report, used results of DNR monthly WQ monitoring downstream from Sac City to assess support of the Class B(WW) aquatic life uses as FST and the Class A primary contact recreation uses as PS. No violations of Class B(WW) WQ criteria for conventional or toxic pollutants occurred in the 24 samples collected during the 1996-97 period. Of the 13 non-flow affected samples collected during summers of 1996 and 1997, 5 samples (=38% violation) exceed the Class A WQ criterion of 200 orgs/ 100 ml. Based on methods for assessing support of primary contact use as described on page 3-34 of the 1998 Section 305(b) guidelines, this reach partially supports its Class A use (i.e., geometric mean (140 org/100 ml) is less than 200 orgs/ 100 ml, but the percent of samples exceeding 400 orgs/100 ml (15%) exceeds the 10% limit for full support). As opposed to the relatively high values seen in 1994 (i.e., thousands/100ml) levels of fecal coliforms during the 1996-97 period were relatively low and ranged from 18 to 550, thus suggesting some improvement in water quality. Additional information is needed in order to better assess the level to which the Class B(WW) aquatic life uses are supported.

For the 2000 report: SUMMARY: Support of the Class A (primary contact recreation) uses was assessed as "fully supported;" support of the Class B(WW) aquatic life uses was assessed as "fully supported." Fish consumption uses were "not assessed." EXPLANATION: The assessments of support for the Class A and Class B(WW) uses are based on results of DNR monthly monitoring downstream from Sac City during the 1998-1999 biennial period. This monitoring showed that 12 of the 14 samples analyzed for levels of indicator bacteria (fecal coliforms) during summer periods of 1998 and 1999 were not materially affected by surface runoff. For purposes of Section 305(b) assessments, DNR uses the long-term average monthly flow plus one standard deviation of this average to identify river flows that are "materially affected by surface runoff." According to the Iowa Water Quality Standards (IAC 1990:8), the water quality criterion for fecal coliform bacteria (200 orgs/100 ml) does not apply during these conditions of high runoff and river flow. The geometric mean of fecal coliform bacteria in the 12 non-runoff-affected samples (142 orgs/100) ml was less than the Class A criterion of 200 orgs/100 ml, thus suggesting full support of the primary contact recreation uses. One of the 12 samples (8% of the samples) contained a level of fecal coliforms greater than U.S. EPA's recommended single sample maximum density of 400 orgs/100 ml. Thus, because the geometric mean was less than the WQ criterion of 200 orgs/100 ml, and because less than 10% of the samples exceeded the U.S. EPA recommended single-sample maximum value of 400 orgs/100 ml., the Class A (primary contact recreation) uses were assessed as "fully supported." See U.S. EPA guidelines for Section 305(b) reporting (1997b, pages 3-33 to 3-35) for more information on this methodology. The only violation of Class B(WW) criteria for conventional parameters was in one of the 23 samples analyzed for pH during the biennial period. The sample collected on October 6, 1997, had a pH level of 9.1 units; this level violated the Class B(WW) (and Class A) criterion of 9.0 units. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), the percentage of violations for pH at this station (4%) does not suggest a water quality impairment (the EPA guidelines allow up to 10% violations of these conventional parameters before impairment of water quality is indicated). Levels of dissolved oxygen and ammonia-nitrogen did not violate the respective Class B(WW) criteria in the 24 samples analyzed during the biennial period, and no violations of Class B(WW) chronic criteria for toxic metals occurred in the two samples analyzed during this period. Thus, the Class B(WW) aquatic life uses were assessed as "fully supported." The level of support of the fish consumption uses was changed from "fully supported" to "not assessed" due to the age of the information: EPA/DNR fish contaminant (RAFT) monitoring was last conducted in this river reach in 1993. Thus, the data are too old (greater than five years) for developing an assessment of current conditions.

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin**N RACCOON R**

-- Cedar Cr (Sac) to headwaters

Waterbody ID No.: IA 04-RAC-0050

Subsegment No.: 2

Subsegment Description: CoRd M54-> DD-101 S36,T91N,R36W BuenaVis

Subsegment Length: 44 miles

ASSESSMENT COMMENTS: 1992 SUA: habscr/fshscr: 25/12 (shock, 11 species); 17 spp. from 5 fams from March 1990 DNR survey. 1998 Biocriteria: Fish IBI= 56 (good), BM-IBI= 60 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1992 DNR stream use assessment and the March 1990 DNR fish survey at the Hwy 7 bridge near Newell to assess support of the Class B(WW) aquatic life uses as FST due to (1) habitat score (25) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of diverse substrate, only isolated channel alterations (despite indication of extensive straightening on maps), relatively stable stream banks, and presence of a few pool/riffle sequences in this larger wadeable stream, (3) fish score (12) equal to the 75th percentile score for stream assessment made with electrofishers, and (4) results of the March 1990 survey which showed a diverse fish community (17 species; 5 families) including adult smallmouth bass. Continued support of the aquatic life uses is threatened by upstream channelization, pasturing of riparian areas, and delivery of sediment and nutrients in nonpoint source runoff.

For the 1998 report, used a review of the 1990 and 1992 DNR stream assessments to continue to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of a relatively diverse fish community (17 species from 5 families) for streams of the Des Moines Lobe subecoregion (47b), (2) presence of all the expected fish taxa (11 of 11) for this subecoregion in the 1990 DNR survey W of Newell, and (3) presence of the expected game fish species (adult smallmouth bass) in the 1990 DNR survey [the biological sampling conducted for the 1992 DNR survey was not completed due to a thunderstorm; thus, the fish community at this site was not fully sampled]. The primary threat to the continued support of the Class B(WW) aquatic life uses remains channelization and other channel alterations.

For the 2000 report, the assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 56 (good) and the BM-IBI score was 60 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

N RACCOON R

-- Cedar Cr (Sac) to headwaters

Waterbody ID No.: IA 04-RAC-0050

Subsegment No.: 3

Subsegment Description: DD101-> trib S4,T92N,R36W Buena Vista Co

Subsegment Length: 44 miles

ASSESSMENT COMMENTS: Assessment is based on results of an October 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the October 1994 DNR stream use assessment near Rembrandt to assess support of the Class B(LR) aquatic life uses as PS due to (1) habitat score (19) worse than the overall score (22) for DNR stream use assessments, and (2) indications on field sheet of extensive channel alterations (straightening), little substrate diversity, and no pool and/or riffle development.

For the 1998 report, continue to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report. Follow-up monitoring is needed to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired. A review of the field sheet from the October 1994 DNR stream use assessment shows a fish community of 4 species. Most of the expected species/genera of Class B(LR) stream in the Des Moines Lobe subcoregion were not present during this assessment (only 3 of the 11 expected fish taxa for Des Moines Lobe streams were present).

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1996 report (see above). The results of the October 1994 DNR stream use assessment-upon which the previous assessment of the Class B(WW) uses was based ("partially supported")-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

HICKORY CR

-- mouth (Dallas) to headwaters

Waterbody ID No.: IA 04-RAC-0051

Subsegment No.: 0

Subsegment Description: mouth to trib S16,T79N,R27W Dallas Co.

Subsegment Length: 4.8 miles

ASSESSMENT COMMENTS: Assessment is based on results of a May 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report; not designated for B(LR) aquatic life uses until June 1995.

For the 1996 report, used results of the May 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (22) equal to the overall median score for DNR stream use assessments, (2) indications on field sheet of diverse substrates, several pool/riffle sequences, only isolated channel alterations, and relatively stable stream banks, and (3) fish score (11) better than 75th percentile score for stream assessments made with seines. Number of species relatively low (7) for region, but note on field sheet states that effective seining was hindered by rocks and snags. Field sheet does not suggest threats to continued support of the aquatic life uses.

For the 1998 report, continue to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST). As noted in the 1996 assessment, the number of fish species (=7) and families (=2) are relatively low for streams in the Des Moines Lobe subcoregion (47b), and only 5 of the 11 expected fish taxa for Des Moines Lobe streams were present in the 1994 stream use assessment. Additional sampling with more a more effective gear type is needed to better determine the status of the aquatic communities. Field sheet from the 1994 assessment indicates relatively high quality aquatic habitats.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." EXPLANATION: The results of the May 1994 DNR stream use assessments-upon which the previous assessment of the Class B(LR) uses was primarily based ("fully supported / threatened")-are approximately 5 years old and can be used to assess current water quality conditions. Thus, the assessment of support of the Class B(WW) aquatic life uses remains "fully supported / threatened" (see assessments developed for the 1996 and 1998 reports above). As stated in the assessment developed for the 1998 report (see above), additional monitoring is needed in this stream reach to better determine the status of aquatic communities and habitats.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

BUTTRICK CR

-- mouth (Greene) to headwaters

Waterbody ID No.: IA 04-RAC-0060

Subsegment No.: 0

Subsegment Description: mouth to confl of E & W Buttrick creeks

Subsegment Length: 10 miles

ASSESSMENT COMMENTS: 1992 SUA: habscr/fshscr=23/13 (shock); 1995 Biocriteria: Fish IBI=47 (fairly good), BM-IBI=72 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Stream assess. form indicates fair habitat quality. Wide and shallow flow over sand and gravel substr. most prevalent type of habitat. Some boulders and cobbles of glacial origin and woody debris snags provide some diversity of habitat and structure. Good pool habitat lacking. Isolated pasture use impacts noted. Surprisingly high diversity of fish species observed (20 species) including some intolerant species (4 darter species, s.m. bass).

For the 1994 report: Used data from 1995 biocriteria sampling site at Waters County Wildlife Area. Fish and habitat metrics from stream use assessment protocol were applied to the data. 26 species of fish found. Habitat quality was fair, much like described above.

For 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST).

For the 1998 report, used a review of the field sheet from the September 1992 DNR stream use assessment and the August 1995 DNR biocriteria sampling to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of a very diverse fish community (species/families: 20/5 (1992), 26/5 (1995)), (2) presence of all the expected fish taxa (11 of 11 in biocriteria sampling) for streams in the Des Moines Lobe subcoregion (47b), (3) presence of fish taxa that indicate above average quality of water and aquatic habitat (e.g., several darter species, smallmouth bass, and northern hogsucker), and (4) lack of indications of significant threats to the continued support of the Class B(LR) uses.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 47 (fairly good) and the BM-IBI score was 72 (good). The aquatic life use support was assessed as fully supported (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

BUTTRICK CR, E BR

-- mouth (Greene) to headwaters

Waterbody ID No.: IA 04-RAC-0070

Subsegment No.: 0

Subsegment Description: mo-> Lost Grove Cr S4,T85,R29W Greene Co

Subsegment Length: 16 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR fish surveys in 1996 near Paton. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream use assess. form indicates below avg. habitat quality. Little diversity of substr. and few pool/riffle sequences observed. Siltation and pasture use impacts noted. Channel bend pools and occasional snags provide some habitat diversity. Frequent stream bank erosion noted. Fair diversity of fish species observed. Extensive channeliz. observed in headwater (general use) reaches of stream.

For 1996 report, changed 1994 assessment of support of the Class B(LR) uses (=PS) to FST due to a stream fish survey in October 1996 that showed (1) an extremely diverse fish community with a total of 28 species from 5 families, including the (soon to be) federally-threatened Topeka shiner, two species considered rare in Iowa (slender madtom and Iowa darter) and smallmouth bass and (2) habitat quality equal better than several other tributaries of the North Raccoon River sampled (Hardin, Cedar, Lake, and Camp creeks); creek is a system of long pools separated by short riffles of glacial cobbles. All the North Raccoon tributaries sampled had the same general characteristics (long pools; short riffles), but E. Buttrick had what appeared to be less turbid, have less siltation of coarse substrates, and less periphyton growth on coarse substrates. Continued support of the aquatic life uses is threatened by channel straightening in headwater reaches and delivery of sediment and nutrients to the stream in nonpoint source runoff from agricultural areas. Results of the 1996 fish survey are described in field notes (JRO-1, 2, and 7-1996).

For the 1998 report, used a review of the field sheet from the 1992 DNR stream use assessment and field notes from the 1996 DNR stream survey to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due reasons stated in the assessment developed for the 1996 305(b) report (see above): very diverse fish community (28 species from 5 families, presence of all the expected fish taxa (11 of 11) for streams in the Des Moines Lobe subecoregion (47b), presence of WQ-sensitive fish species including the listed Topeka shiner, and relatively high quality aquatic habitats in areas significant channel alterations. As noted in the assessment developed for the 1994 report, the headwater reaches of this stream have been extensively channelized, and areas of streambank erosion exist, but these alterations have not altered the aquatic community beyond what is expected of a Class B(LR) stream in this subecoregion.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1998 report (see above). This assessment was based on results of three DNR fish surveys conducted at two locations on East Buttrick Creek in October 1996.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

BUTTRICK CR, W BR

-- mouth (Greene) to headwaters

Waterbody ID No.: IA 04-RAC-0080

Subsegment No.: 0

Subsegment Description: mouth to DD-52 S16,T86N,R30W Webster Co.

Subsegment Length: 23 miles

ASSESSMENT COMMENTS: SUAs: Habscrs/fshscrs=24/7 (1990): 23/12 (1992); 1995 Biocriteria: Fish IBI=64 (good), BM-IBI=69 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Two assessments completed at same site; one in 1990 and one in 1992. Habitat assess. results were similar indicating fairly good habitat quality despite frequent pasture use impacts. A fair amount of habitat diversity observed. Much agricultural use in flood plain, either row cropping or pasture. Frequent pasture use and channeliz. observed in general use segment. Rel. low diversity of fish observed, virtually all cyprinid species.

For the 1996 report: Changed use support status to FS/T from PS based on data from biocriteria site at Spring Lake Co. Prk. Although, many pollution tolerant fish species were abundant, there were good numbers and diversity of other species, including game fish (smallmouth bass; ch. catfish) and several intolerant species. Habitat quality was fairly good. Threatened by sediment and high flow impacts to channel.

For the 1998 report, used a review of the field sheets from the 1990 and 1992 DNR stream use assessments, and the results of the 1995 DNR biocriteria sampling, to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) exceptionally diverse fish community at the 1995 biocriteria site near Spring Lake Park (29 species from 6 families), (2) presence of all the expected fish taxa (11 of 11) for streams in the Des Moines Lobe subcoregion (47b), and (3) presence of several fish species (e.g., northern hogsucker, slender madtom, and several darter species) that indicate above average water quality and aquatic habitat. Although impacts to the aquatic habitats of this stream exist, including (as identified in the previous 305(b) assessments above) row cropping, riparian pasturing, and high-flow channel scouring, these impacts have not altered the fish community beyond what is expected for a fully supporting Class B(LR) stream. This waterbody segment is relatively long (approx. 23 miles), and if upper reaches are shown to be affected more by habitat alterations than are lower reaches (where biocriteria sampling was conducted), the waterbody should be split into subsegments.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 64 (good) and the BM-IBI score was 69 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

HARDIN CR

-- mouth (Greene) to headwaters

Waterbody ID No.: IA 04-RAC-0090

Subsegment No.: 0

Subsegment Description: mo to Happy Run S22,T85N,R31W Greene Co.

Subsegment Length: 27 miles

ASSESSMENT COMMENTS: Assessment is based on results of an October 1996 DNR fish survey. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates well-below avg. habitat quality. Frequent pasture use impacts including stream bank erosion and siltation were observed. Very little habitat diversity or structure in the channel. Wide & shallow conditions prevail. Low diversity of fish observed; 5 species, all cyprinids. Extensive pasture use impacts noted in general use segment of stream contributing to poor quality in B(LR) segment.

For 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=PS). Results of October 1996 DNR fish survey support this assessment. Hardin Creek in within range of the soon-to-be federally threatened Topeka shiner, and 1996 survey was conducted to document presence of Topeka shiners; none collected in Hardin Creek.

For the 1998 report, used a review of the June 1992 DNR stream use assessment and the October 1996 DNR fish survey to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to results of the 1996 DNR fish survey approximately 1.5 miles SE of Churdan that showed (1) a moderately diverse fish community (13 species from 3 families) for streams in the Des Moines Lobe subcoregion (47b), (2) presence of a majority of the expected fish taxa (8 of 11) for streams in this subcoregion, and (3) presence of relatively good habitat quality in the reach sampled, with a meandered channel form and good growth of grasses in the riparian area. Due to conflicting results of previous stream assessments, follow-up monitoring is needed to better determine the status of the aquatic communities and habitats of this stream.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1996 and 1998 reports (see above). This assessment was primarily based on the results of an October 1996 DNR fish survey near Churdan in Greene County. Thus, the assessment of support of the Class B(WW) aquatic life uses remains "fully supported / threatened." As stated in the assessment developed for the 1998 report (see above), results of biological monitoring from different locations on Hardin Creek have produced conflicting assessments (for example, "partially supporting" versus "fully supported / threatened"). Thus, follow-up monitoring is needed in this stream reach to better determine the status of aquatic communities and habitats.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

PRAIRIE CR

-- mouth (Calhoun) to headwaters

Waterbody ID No.: IA 04-RAC-0137

Subsegment No.: 0

Subsegment Description: mouth to DD 198 S2,T86N,R34W Calhoun Co.

Subsegment Length: 3.3 miles

ASSESSMENT COMMENTS: Assessment is based on results of a September 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report; not designated for Class B(LR) aquatic life uses until June 1995.

For 1996 report, used results of the September 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (23) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of diverse substrates, several pool/riffle sequences, only isolated channel alterations, and relatively stable stream banks, (3) occurrence of a relatively diverse fish community with 13 species from 3 families despite notes on field sheet that stream was too rocky in some areas to seine effectively. Field sheet suggests that pasturing of the riparian corridor threatens the continued support of the aquatic life uses.

For the 1998 report, continue to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST). A review of the field sheet from the September 1994 DNR stream use assessment shows that a majority of the expected fish taxa (7 of 11) were present, despite incomplete sampling due to rocky conditions. Although over-pasturing of the riparian area was mentioned in the assessment developed for the 1996 305(b) report (see above) as a threat to the continued support of the Class B(LR) uses, the field sheet indicates only "isolated" areas with such impacts.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1996 and 1998 reports (see above). The results of the September 1994 DNR stream use assessment-upon which the previous assessment of the Class B(WW) uses was based-are approximately 5 years old and thus can be used to assess current water quality conditions.

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

CAMP CR

-- mouth (Calhoun) to headwaters

Waterbody ID No.: IA 04-RAC-0140

Subsegment No.: 0

Subsegment Description: mouth to trib S34,T88N,R34W Calhoun Co.

Subsegment Length: 7.9 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) a September 1994 DNR stream use assessment and (2) an October 1996 DNR fish survey. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (23) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of diverse substrates, several pool/riffle sequences, and only isolated channel alterations, (3) fish score (13) better than the 75th percentile score (10) for stream assessments made with seines, and (4) moderately diverse fish community (10 species). Surveys conducted by DNR staff (JRO-4-1992 and JRO-3-1996) support this assessment. Both assessments were conducted in Hickroy Grove Park approx. 2 miles S of Yetter, and both show above average habitat quality and relatively diverse fish community (1992 survey: 14 species from 4 families; 1996: 19 species from 6 families). The soon-to-be federally-threatened Topeka shiner was taken from Camp Creek by USFWS in 1995. Threats to continued support of the aquatic life uses include pasturing of the riparian corridor of the stream and nonpoint source runoff of nutrients and sediment from agricultural areas.

For the 1998 report, continue to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST). A review of the field sheet from the September 1994 DNR stream use assessment, and the DNR fish surveys in April 1992 and October 1996, show that a majority of the expected fish taxa (6 of 11, 8 of 11 and 8 of 11) were present, thus suggesting that the Class B(LR) uses are fully supported. In addition to the threats from over-pasturing of the riparian corridor, the field sheet from the 1994 stream use assessment indicates frequent areas of streambank erosion. Although pasturing of riparian corridors often destabilizes and leads to erosion of streambanks, some of the streambank erosion along Camp Creek is naturally occurring.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1996 and 1998 reports (see above). The September 1994 DNR stream use assessment and the October 1996 DNR fish survey-upon which the previous assessment of the Class B(WW) uses was based-were both conducted within the last five years and thus results from these surveys can be used to assess current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

CEDAR CR

-- mouth (Sac) to L Cedar Cr.

Waterbody ID No.: IA 04-RAC-0150

Subsegment No.: 0

Subsegment Description: mo-> L Cedar Cr S15,T90N,R34W Pocahontas

Subsegment Length: 4.7 miles

ASSESSMENT COMMENTS: Assessment is based on results of a September 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as PS due to (1) habitat score (17) well-below the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of no diversity of substrates, no pool/riffle sequences, extensive channel alterations, and relatively unstable/erosive stream banks, (3) fish community of primarily tolerant cyprinids.

For the 1998 report, continue to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=PS). Review of the field sheet from the September 1994 DNR stream use assessment shows a fish community that lacks several species/genera typical of Class B(LR) streams in this region.* Follow-up monitoring is needed to determine the status of the aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired. (* Only 4 of the 11 fish taxa expected in streams of the Des Moines Lobe subcoregion were present.)

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1996 report (see above). The results of the September 1994 DNR stream use assessment-upon which the previous assessment of the Class B(WW) uses was based ("partially supported")-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired. A fish kill occurred upstream from this stream reach in Drainage Ditch 21 on Sept. 28, 1998; the kill occurred approximately 5 miles WSW of Pocahontas. Approximately mile of DD-21 was affected; the kill did not affect Cedar Creek. The kill was caused by animal waste reaching the stream; an estimated 13,600 fish were killed.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

L CEDAR CR

-- mouth-Pocahontas to headwaters

Waterbody ID No.: IA 04-RAC-0161

Subsegment No.: 0

Subsegment Description: mouth to trib S19,T91N,R34W PocahontasCo

Subsegment Length: 7.7 miles

ASSESSMENT COMMENTS: Assessment is based on results of a September 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report. Stream not designated for Class B(LR) aquatic life uses until June 1995.

For 1996 report, used results of the September 1994 DNR stream use assessment in Pocahontas County to assess support of the Class B(LR) aquatic life uses as PS due to (1) habitat score (21) worse than the overall median score (22) for DNR stream use assessments and (2) indication on field sheet of "extensive" channel alterations (although the type of alteration is not identified on the field sheet, presume channel straightening). Other habitat features appear favorable, and the fish community is moderately diverse; notes on field sheet indicate "several good deeper water reaches."

For the 1998 report, used a review of the field sheet from the September 1994 DNR stream use assessment in Pocahontas County to continue to assess support of the Class B(LR) aquatic life uses as PS due to (1) presence of less than half of the expected fish taxa (5 of 11) for streams in the Des Moines Lobe subcoregion (47b) and (2) indications on field sheet of extensive channel alterations. Follow-up monitoring is needed to determine the status of the aquatic communities and to determine the degree to which the Class B(LR) uses may be impaired.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1996 report (see above). The results of the September 1994 DNR stream use assessment in Pocahontas County-upon which the previous assessment of the Class B(WW) uses was based ("partially supported")-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

DRAINAGE DITCH 21

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 04-RAC-0162

Subsegment No.: 0

Subsegment Description: mouth (NE 1/4, S7, T91N, R33W, Pocahontas Co.) to headwaters

Subsegment Length: 10 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of a fish kill in September 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

"General Use" waterbody. No information available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The general aquatic life uses of this stream were assessed as "partially supported." EXPLANATION: A fish kill occurred on this stream reach on Sept. 28, 1998; the kill occurred approximately 5 miles WSW of Pocahontas. Approximately one mile of DD-21 was affected; the kill did not affect Cedar Creek. The kill was caused by animal waste reaching the stream; an estimated 13,600 fish were killed. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill during the most recent three-year period indicates "partial support" of the aquatic life uses. Thus, the general aquatic life uses of this stream were assessed as "partially supported."

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin**S RACCOON R**

-- M Raccoon R to headwaters

Waterbody ID No.: IA 04-RAC-0180

Subsegment No.: 2

Subsegment Description: Brushy Cr->Frost Cr S18,T80N,R32W Guthri

Subsegment Length: 40 miles

ASSESSMENT COMMENTS: Assessment is based on results of a 1994 DNR stream use assessment. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
 Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as PS due to (1) indications on field sheet of little substrate diversity and no pool/riffle development and (2) note on field sheet regarding "very few areas to seine due to wide shallow" conditions. Habitat score (22) is equal to the overall median score for DNR stream use assessments and thus suggests that stream does support uses. The wide and very shallow channel, and the lack of pool/riffle development, suggest an impairment due to siltation and channel alterations, especially in upstream reaches.

For the 1998 report, used a review of the field sheet from the September 1994 DNR stream use assessment to continue to assess support of the Class B(LR) aquatic life uses as PS due to (1) relatively low diversity (8 species; 3 families) for a larger stream in the Mississippi River portion of the Southern Iowa Rolling Loess Prairies (47f) subcoregion, (2) presence of less than a majority of the expected fish taxa (4 of 8) for streams in this subcoregion, and (3) indications on field sheet of relatively poor quality aquatic habitats despite the lack of significant threats to the physical characteristics of the river reach assessed (thus, suspect upstream impacts are responsible for relatively low quality aquatic habitats). Follow-up monitoring is needed to determine the status of the aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

For the 2000 report: The Class B(LR) aquatic life uses remain "partially supported." EXPLANATION: The Class B(LR) uses remain assessed as "partially supported" based on results of the September 1994 DNR stream use assessment in Guthrie County (see assessment developed for the 1998 report above). This assessment was conducted within the last five years; thus, results from this assessment are useful for characterizing current water quality conditions.

UNNAMED TRIBUTARY

--' General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 04-RAC-01985

Subsegment No.: 0

Subsegment Description: mouth (SE 1/4, S14, T78N, R30W, Guthrie Co.) to headwaters

Subsegment Length: 2 miles

ASSESSMENT COMMENTS: Assessment based on occurrence of a fish kill in June 1999. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

New waterbody for the 2000 305(b) cycle. Not assessed for the 1994, 1996, or 1998 reports.

For the 2000 report: SUMMARY: The general aquatic life uses were assessed as "partially supported." EXPLANATION: A fish kill occurred in this unnamed tributary of Long Branch and the South Raccoon River on June 19, 1999. The site of the kill is approximately 3 miles northeast of Stuart in Guthrie County. The kill was caused by leakage or overflow of manure from a waste retention structure that flowed through drainage tiles to this stream. Investigation by DNR/EPD field office suggested (1) that this kill did not affect the South Raccoon River and (1) that previous discharges of manure through the tile system had occurred. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the general aquatic life uses of this stream reach were assessed as "partially supported."

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

M RACCOON R

-- mouth (Dallas) to L. Panorama

Waterbody ID No.: IA 04-RAC-0200

Subsegment No.: 1

Subsegment Description: mo-> Redfield Dam S5,T78N,R29W Dallas Co

Subsegment Length: 20 miles

ASSESSMENT COMMENTS: Assessment is based on results of an October 1997 DNR fish survey. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information from DNR publication "Iowa Fish and Fishing" (Harlan et al. 1987: 12) to assess support of the Class B(WW) aquatic life uses as FST due to description of the fishing potential in this reach: "Excellent channel catfishing may be found in the lower part of the Middle Raccoon during periods of good water levels." Threats to continued support of these uses include channel alterations in the watershed and delivery of sediment to the river in nonpoint source runoff. No information is available to assess the Class A (primary contact recreation) uses.

For the 1998 report, used a review of the field notes from the October 1997 DNR fish survey at Hanging Rock Access at Redfield, in combination with the assessment developed for the 1996 report (see above), to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of a very diverse fish community of 19 species from 5 families for streams in the Southern Iowa Rolling Loess Prairies (47f) subcoregion, (2) presence of all the expected fish taxa (8 of 8) for streams in this subregion, (3) presence of the expected game fish species (channel catfish reported as "uncommon" with juveniles and adults present, and smallmouth bass reported as "rare" with only 2 juveniles present), and (4) presence of above average aquatic habitats for a small river with variety substrate types and current velocities, with some water too deep to sample with a backpack electrofisher. No threats to continued support of the Class B(WW) uses observed, but stream was only assessed at the upstream boundary of the Class B(WW) reach in a public (park) area. Additional biological monitoring is needed to better determine the degree to which the Class B(WW) uses are supported. No information available for assessing support of the Class A primary contact recreation uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(WW) aquatic life uses remain "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class A uses remain "not assessed" due to the lack of monitoring for indicator bacteria in this reach of river. The Class B(WW) uses remain assessed as "fully supported / threatened" based on results of the October 1997 DNR fish survey at Hanging Rock Park (see assessment for the 1998 report above). Fish consumption uses remain "not assessed" due to a lack of fish tissue monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

M RACCOON R

-- mouth (Dallas) to L Panorama

Waterbody ID No.: IA 04-RAC-0200

Subsegment No.: 2

Subsegment Description: Redfield Dam to Panora DW intake

Subsegment Length: 20 miles

ASSESSMENT COMMENTS: Assessment is based on surveys by the DNR Fisheries Bureau (the most recent in September 2000). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information from DNR publication "Iowa Fish and Fishing" (Harlan et al. 1987: 12) to assess support of the Class B(WW) aquatic life uses as FST due to description of the fishing potential in this reach: "Sediment trapping in Lake Panorama has had a positive influence on fishing for a considerable distance below the structure. Smallmouth bass fishing in this region is excellent, particularly in the stretch from Panora to Linden. In June 1988, DNR staff (Olson and Howell) assessed the fish community at one location (fishing access 3.5 miles SE of Panora) in this reach. The fish community at this location was relatively diverse with 12 species from 5 families including smallmouth bass. No information available for assessing Class A (primary contact recreation) uses.

For the 1998 report, used information from the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (see above), in combination with information from the DNR Fisheries Bureau, to continue to assess support of the Class B(WW) uses as FST. Recent surveys by the DNR Fisheries Bureau in the upper portion of this reach show good populations of the expected game fish species (e.g., channel catfish), but unexpectedly low populations of the other important game fish, smallmouth bass. Although follow-up surveys are needed, DNR biologists believe that the prolonged high river flows during floods in the early 1990s widened the river's channel and thus led to a reduction in the quality of the aquatic habitats at more normal river stages. Results of additional surveys will help determine the most appropriate means of improving habitat quality. No information is available for developing an assessment of support of either the Class A primary contact recreation uses or the Class C drinking water uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(WW) aquatic life uses remain "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class A uses remain "not assessed" due to the lack of monitoring for indicator bacteria in this reach of river. The Class B(WW) uses remain assessed as "fully supported / threatened" based on results of recent (September 2000) surveys by the DNR Fisheries Bureau that continue to show problems with smallmouth bass populations in this river reach (see assessment developed for the 1998 report above). According to the DNR Fisheries Bureau, the leading hypothesis for explaining the lower numbers of smallmouth bass is that prolonged flooding in summer 1993 resulted in a wider and less well-defined channel, increased streambank erosion, slower moving water with less scouring action, and increased deposition of finer, softer substrate types (silt and sand). All of these changes in the river suggest a decline in the quality of aquatic habitats for smallmouth bass. While this river reach continues to support a warmwater fish community typical of central Iowa rivers, the numbers of smallmouth bass remain lower than during the late 1980s and early 1990s. The DNR Fisheries Bureau continues to study this problem and has suggested that streambank stabilization measures (for example, jetties) may help increase streambank stability and improve aquatic habitats. Fish consumption uses remain "not assessed" due to a lack of fish tissue monitoring in this river reach.

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin**M RACCOON R**

-- mouth (Dallas) to L Panorama

Waterbody ID No.: IA 04-RAC-0200

Subsegment No.: 3

Subsegment Description: Panora DW intake to L Panorama dam

Subsegment Length: 20 miles

ASSESSMENT COMMENTS: Assessment is based on (1) information from the DNR Water Quality Bureau/Water Supply Section and (2) surveys by the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Partial		

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information from DNR publication "Iowa Fish and Fishing" (Harlan et al. 1987: 12) to assess support of the Class B(WW) aquatic life uses as FST due to description of the fishing potential in this reach: "Sediment trapping in Lake Panorama has had a positive influence on fishing for a considerable distance below the structure. Smallmouth bass fishing in this region is excellent, particularly in the stretch from Panora to Linden. In June 1988, DNR staff (Olson and Howell) assessed the fish community at one location (Lennon Mill access in Panora) in this reach. The fish community at this location was moderately diverse with 12 species from 4 families including smallmouth bass adults and juveniles. No information available for assessing Class A (primary contact recreation) uses.

For the 1998 report, see the assessment of support of the Class B(WW) aquatic life uses developed for the next waterbody subsegment downstream (IA 04-RAC-0200-2) from the Redfield Dam to the Panora drinking water intake. No information is available for developing an assessment of the Class A primary contact recreation uses. Results of monitoring required by the Safe Drinking Water Act and summarized by the DNR Water Supply Section were used to assess support of the Class C (drinking water) uses as FST due to violations of the nitrate MCL during three samplings in 1997 (January, May, and June). Levels of nitrate were reported as 11.0 mg/l for all three samplings (MCL=10.0 mg/l as N). According to the DNR Public Drinking Water Program Annual Compliance Report for 1997, the Panora Water Works achieved compliance with the nitrate MCL in December 1997.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(WW) aquatic life uses remain "fully supported / threatened." The Class C (drinking water) uses were assessed as "partially supported." Fish consumption uses remain "not assessed." EXPLANATION: The Class A uses remain "not assessed" due to the lack of monitoring for indicator bacteria in this reach of river. The Class B(WW) aquatic life uses remain assessed as "fully supported / threatened" based on results of recent (September 2000) surveys by the DNR Fisheries Bureau that continue to show problems with smallmouth bass populations in this river reach (see assessment developed for the 1998 report above). According to the DNR Fisheries Bureau, the leading hypothesis for explaining the lower numbers of smallmouth bass remains that prolonged flooding in summer 1993 resulted in a wider and less well-defined channel, increased streambank erosion, slower moving water with less scouring action, and increased deposition of finer, softer substrate types (silt and sand). All of these changes in the river suggest a decline in the quality of aquatic habitats for smallmouth bass. While this river reach continues to support a warmwater fish community typical of central Iowa rivers, the numbers of smallmouth bass remain lower than during the late 1980s and early 1990s. The DNR Fisheries Bureau continues to study this problem and has suggested that streambank stabilization measures (for example, jetties) may help increase streambank stability and improve aquatic habitats. The Class C (drinking water) uses were assessed as "partially supported" due to issuance by the Panora Water Works of four notices of MCL violations for nitrate during the 1998-1999 biennial reporting period. These violations occurred May 1999 and May, July, and August of 1998. According to EPA and DNR methods for assessing support of Class C (drinking water) uses, one or more drinking water advisory lasting 30 days or less per year suggests that the Class C use is only "partially supported" (see pages 3-38 to 3-44 of U.S. EPA 1997b and the DNR assessment methodology for Section 305(b) reporting). Fish consumption uses remain "not assessed" due to a lack of fish tissue monitoring in this river reach.

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

MOSQUITO CR

-- mouth (Dallas) to headwaters

Waterbody ID No.: IA 04-RAC-0240

Subsegment No.: 0

Subsegment Description: mouth to trib S21,T81N,R30W Guthrie Co.

Subsegment Length: 26 miles

ASSESSMENT COMMENTS: 1992 SUAs: habscrs/fshscrs=25/13, 22/11 (shock). 1996 Biocriteria: Fish IBI=28 (fair), BM-IBI=67 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. forms indicate fairly good habitat quality despite sedimentation impacts. Coarse substrate embeddedness and poorly developed pools observed. Rel. wide and shallow conditions prevail. Some pool habitat provided in association with woody debris snags. Moderate diversity of fish observed. Time of year may be a factor in the somewhat lower than expected fish sampling results.

For the 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST).

For the 1998 report, used information from the July 1996 DNR stream biocriteria sampling to assess support of the Class B(LR) aquatic life uses as FST: majority of the expected fish taxa present; no violations of Class B(LR) WQ criteria in the water sample collected during biocriteria sampling. Review of field sheets from the October 1992 DNR stream use assessment shows moderately diverse fish communities (species/families: 11/5, 8/4) and a majority of the expected fish taxa (10 of 11 and 7 of 11) for streams in the Des Moines Lobe subecoregion (47b). Field sheets do not indicate significant impacts from channel alterations or streambank erosion but do indicate a predominance of shifting sand substrate.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 28 (fair) and the BM-IBI score was 67 (good). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Des Moines River Basin

Raccoon River Subbasin

DEER CR

-- mouth (Guthrie) to headwaters

Waterbody ID No.: IA 04-RAC-0249

Subsegment No.: 0

Subsegment Description: mouth to trib S19,T78N,R30W Guthrie Co.

Subsegment Length: 3.9 miles

ASSESSMENT COMMENTS: Habscr/fshscr: 22/- (no fish collected due to interference from beaver dams, cattle & road constr. 1998 Biocriteria: Fish IBI= 60(good), BM-IBI= 72(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully

Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the August 1992 DNR stream use assessment NNW of Stuart to assess support of the Class B(LR) aquatic life uses as FST due to (1) indications on field sheet of diverse substrates, several pool/riffle sequences, and only isolated channel alterations, (2) comments on field sheet: "above average aquatic habitat due to pool/riffle sequences with limestone cobble riffles and pools up to 2.5 to 3.0' deep," and (3) habitat score (22) equal to the overall median score for DNR stream use assessments. Continued support of the aquatic life uses is immediately threatened by pasturing of the riparian zone and the resultant widening/shallowing of the stream.

For the 1998 report, used a review of the field sheet from the August 1992 DNR stream use assessment NNW of Stuart to change the assessment of support of the Class B(LR) aquatic life uses to "not assessed" due to the lack of biological information for this stream. Additional monitoring is needed to provide the biological information necessary to develop an accurate assessment of support of the Class B(LR) uses.

For the 2000 report, the assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 60 (good) and the BM-IBI score was 72 (good). The aquatic life use support was assessed as fully supported (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin**DES MOINES R**

-- Raccoon R. to Saylorville Dam

Waterbody ID No.: IA 04-UDM-0010

Subsegment No.: 1

Subsegment Description: Raccoon R. to Center St Dam in DSM

Subsegment Length: 12 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring at Sycamore Access conducted by Iowa State Univ. as part of the ACOE's Des Moines R./Saylorville Res./Red Rock Res. water quality study. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, assessed as NS due to fish consumption advisory issued in Dec 1989 due to high levels of chlordane in fish between Red Rock & Saylorville dams.

For 1994 report, reach assessed as FST due to lifting of the fish consumption advisory in April 1993. Levels of chlordane in carp were < 1/2 FDA action levels; levels in ccat, however, were greater than 1/2 the FDA action level (0.19, 0.13, 0.088); thus assess fish consumption as FST. Monitoring data show no violations of Class B toxics; thus assess aquatic life support as FST due to known threats from agricultural NPS.

For 1996 report, only violations of Class B WQ criteria were 1 of 12 samples for copper (12% viol) and 8 of 9 samples for mercury (89% viol). This monitoring station is located approx 2 miles dstr from Saylorville Dam and anthropogenic sources of either Hg or Cu are unlikely to exist. Thus attribute occurrence of these metals to naturally occurring sources and disregard viols for 305(b) reporting purposes. In addition, annual monitoring of fish tissue (carp, fillets & whole fish) by ISU has shown levels of mercury far below the FDA action level of 1 ppm. Levels of pesticides in fish tissue mon by ISU all < 1/2 FDA action level; Thus assess both aquatic life and fish consumption use as FST.

For the 1998 report, the only violations for Class B(WW) WQ criteria for conventional or toxic pollutants were for two toxic metals: copper & mercury. One of 12 samples collected from Oct 1994 through Sept. 1997 exceeded the Class B(WW) WQ chronic criterion for copper; this sample was collected on Oct. 11, 1994. Ten of 11 samples collected during this period exceeded the Class B(WW) chronic WQ criterion for mercury. Due to (1) problems with analysis of mercury in water (see pages 3-58 and 3-99 to 3-100 of Iowa's 1996 Section 305(b) report), and (2) historical lack of high levels of mercury in fish tissue samples from this reach of river, data for mercury in water were not used to develop an assessment of support of the Class B(WW) aquatic life uses. According to Section 305(b) assessment guidelines, the single violation of the WQ criterion for copper does not suggest a WQ impairment; thus, Class B(WW) aquatic life uses were assessed as FST with threat from high levels of toxic metals (copper). Fish contaminant monitoring conducted in this reach by ISU during 1996 & 97 showed that levels of pesticides in composite samples of 3-yr old whole-fish carp were well below 1/2 of the respective FDA action levels; thus, fish consumption uses were assessed as FS.

For the 2000 report: SUMMARY: Continue to assess support of the Class B(WW) aquatic life uses as fully supported/threatened; fish consumption uses remain assessed as fully supported. EXPLANATION: The assessments of support of the beneficial uses are based on results of water quality monitoring conducted by Iowa State University (under contract with the U.S. Army Corps of Engineers) as part of the Des Moines River Water Quality Study (see Lutz et al. 1999 and Lutz 2000). Results from the ISU/ACOE monitoring station located approximately two miles downstream from Saylorville Dam (=Sycamore Access) suggest that the Class B(WW) aquatic life uses are fully supported/threatened (=FST). No violations of Class B(WW) water quality criteria for conventional parameters occurred in the 47 samples collected at this monitoring station during the 1998-99 biennial period. In the nine samples analyzed for toxic metals, the only violations were for mercury: all nine samples analyzed for toxic metals during the 1998-99 biennial period contained levels of dissolved mercury above the Iowa WQ criterion of 0.05 ug/l. Due, however, to (1) problems with analysis of mercury in water (see pages 3-58 and 3-99 to 3-100 of Iowa's 1996 Section 305(b) report) and (2) the historical lack of high levels of mercury in fish tissue samples from this reach of river, data for mercury in water were not used to assess support of the Class B(WW) aquatic life uses of this river reach. In addition, a recent study (Montgomery and Watson 1998) was conducted to determine whether levels of mercury in the vicinity of Des Moines presented a water quality problem. Study results showed that (1) average levels of mercury in the Des Moines River ranged from 2.7 to 2.8 ng/l and were well below the Iowa water quality criterion of 50 ng/l; (2) levels of mercury in effluent of the Des Moines wastewater treatment plant averaged 3.30 ng/l but account for only 1.7 percent of the total river mercury load leaving the city of Des Moines, (3) mercury levels in Des Moines River fish (maximum of 0.179 ppm) were well below the FDA action level of 1.0 ppm, (4) most of the mercury loading seen at Des Moines comes from upstream areas in the Des Moines and especially the Raccoon river basins, and (5) river mercury concentrations were strongly correlated to total suspended solids concentrations. Due to continuing uncertainty regarding the significance of mercury levels in the Des Moines River, the assessment of support of the Class B(WW) aquatic life uses was downgraded from "fully supported" to "fully supported / threatened." Fish contaminant monitoring conducted downstream from Saylorville Reservoir by ISU/ACOE in 1998 and 1999 showed that levels of contaminants (dieldrin, chlordane, alachlor, trifluralin, and chlorpyrifos) in composite samples of whole fish common carp (98 & 99) and common carp fillets (98) were all less than 1/2 of the respective FDA action levels or DNR levels of concern. Thus, fish consumption uses were assessed as fully supported. For more information on ISU/ACOE water quality monitoring in this river reach, see Lutz et al. (1999) and Lutz (2000).

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Rivers and Streams: Des Moines River Basin

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Upper Des Moines River Subbasin

DES MOINES R

-- Raccoon R. to Saylorville Dam

Waterbody ID No.: IA 04-UDM-0010

Subsegment No.: 2

Subsegment Description: Center St Dam in DSM to I-80 bridge

Subsegment Length: 12 miles

ASSESSMENT COMMENTS:

Assessment is based on results of monitoring at Sycamore Access conducted by Iowa State Univ. as part of the ACOE's Des Moines R./Saylorville Res./Red Rock Res. water quality study. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully
Drinking Water Supply	-- Not supporting		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, Class B uses were assessed as NS due to fish consumption advisory issued in Dec 89 due to chlordane (although ISU monitoring in 90 and 91 showed very low levels of all contams); Class A assessed as FST due to only one violation in 20 samples (a very low frequency of violations in Iowa rivers); Class C assessed as NS due to drinking water advisories issued by city of Des Moines due to high nitrate; at 430051, 21 of 76 sampled exceeded 10 mg/l w/ mean of 6.1 (=FS).

For 1994 report, Class B assessed as FST due to lifting of fish consumption advisory in April 1993 and lack of violations of Class B toxics (except Hg); ISU fish mon continues to show very low levels of chlordane, dieldrin, et al. Class C assessed as PS: although 17 of 63 samples had NO₃ > 10 mg/l, the mean level was 7.3 w/ a max of 11.7 (=FS); instal NO₃ remov. system = PS.

For 1996 report, had 1 of 18 samples exceed Class A WQC for fecal coliforms (=6% viol = FS). Had 1 of 8 samples exceed Class B WQC for copper (12% viol) and 8 of 9 samples for mercury (89% viol). As stated elsewhere, no apparent sources of these metals exist; thus disregard for 305(b) reporting. No other Class B WQC exceeded; thus assess as FST. Four of 68 samples analyzed for nitrate exceeded Class C WQC of 10 mg/l as N (=6% viol). Both mean (5.94 mg/l) and median (5.54) NO₃ concentrations were < the Class C criterion; thus assess as FS. Due to rel. low levels of NO₃, decided not to consider installation of NO₃ removal system at DM water works as a cause for impairment on this seldom-used intake (instal. of the NO₃ removal system, however, should be considered an impairment for the Raccoon R. dstr from Van Meter).

For the 1998 report, Class A primary contact recreation uses were assessed as FS: none of the 18 samples collected during summers of 1996 & 97 exceeded the Class A WQ criterion of 200 fecal coliforms/100 ml (geometric mean= 11 orgs/100 ml; max= 70 orgs/ 100 ml). The only violations of Class B(WW) WQ criteria for conventional or toxic pollutants were for copper & mercury. One of 12 samples from Oct 94 to Sep 97 exceeded the Class B(WW) chronic criterion for copper. Ten of 11 samples collected during this period exceeded the Class B(WW) chronic criterion for mercury. Due to (1) problems with analysis of Hg in water (see pages 3-58 & 3-99 to 3-100 of Iowa's 1996 Section 305(b) report), and (2) historical lack of high levels of mercury in fish tissue samples from this reach, data for mercury were not used for this assessment. Single violation for copper does not suggest impairment; thus Class B(WW) uses assessed as FST. Fish contam. mon by ISU in 96 & 97 shows low level of pesticides well below 1/2 of FDA action levels; thus, fish consumption uses assessed as FS. Class C drinking water uses assessed as FST: 3 of 67 samples coll. between Oct 94 & Sep 97 exceeded the MCL for nitrate (4.5% viol; mean=6.07 & median=5.93 mg/l). Viols from Apr-Jun 1995. No other violations of Class C WQ criteria.

For the 2000 report: SUMMARY: Continue to assess support of the Class A (primary contact recreation) uses as fully supported and the Class B(WW) aquatic life uses as fully supported/threatened. Fish consumption uses remain assessed as fully supported. The assessment for Class C (drinking water) uses was downgraded from "fully supported" to "not supported." EXPLANATION: The assessments of support of the beneficial uses are based on results of water quality monitoring conducted by Iowa State University (under contract with the U.S. Army Corps of Engineers) as part of the Des Moines River Water Quality Study (see Lutz et al. 1999 and Lutz 2000). Results from the ISU/ACOE monitoring station located approximately two miles downstream from Saylorville Dam (=Sycamore Access) continue to suggest that Class A uses are fully supported. The geometric mean of fecal coliform bacteria in the 13 non-runoff affected samples collected during summers of 1998 and 1999 (40 orgs/100 ml) is well below the state WQ criterion of 200 orgs/100 ml; only 8% of the samples (= 1 sample) exceeded the EPA-recommended single sample maximum value of 400 orgs/100 ml. Results from the ISU/ACOE monitoring station located approximately two miles downstream from Saylorville Dam also suggest that the Class B(WW) aquatic life uses are fully supported/threatened (=FST). No violations of Class B(WW) water quality criteria for conventional parameters occurred in the 47 samples collected at this monitoring station during the 1998-99 biennial period. In the nine samples analyzed for toxic metals, the only violations were for mercury: all nine samples analyzed for toxic metals during the 1998-99 biennial period contained levels of dissolved mercury above the Iowa WQ criterion of 0.05 ug/l. Due, however, to (1) problems with analysis of mercury in water (see pages 3-58 and 3-99 to 3-100 of Iowa's 1996 Section 305(b) report) and (2) the historical lack of high levels of mercury in fish tissue samples from this reach of river, data for mercury in water were not used to assess support of the Class B(WW) aquatic life uses of this river reach. In addition, a recent study (Montgomery and Watson 1998) was conducted to determine whether levels of mercury in the vicinity of Des Moines presented a water quality problem. Study results showed that (1) average levels of mercury in the Des Moines River ranged from 2.7 to 2.8 ng/l and were well below the Iowa water quality criterion of 50 ng/l; (2) levels of mercury in effluent of the Des Moines wastewater treatment plant averaged 3.30 ng/l but account for only 1.7 percent of the total river mercury load leaving the city of Des Moines, (3) mercury levels in Des Moines River fish (maximum of 0.179 ppm) were well below the FDA action level of 1.0 ppm, (4) most of the mercury loading seen at Des Moines comes from upstream areas in the Des

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

Moines and especially the Raccoon river basins, and (5) river mercury concentrations were strongly correlated to total suspended solids concentrations. Due to continuing uncertainty regarding the significance of mercury levels in the Des Moines River, the assessment of support of the Class B(WW) aquatic life uses was downgraded from "fully supported" to "fully supported / threatened." Fish contaminant monitoring conducted downstream from Saylorville Reservoir by ISU/ACOE in 1998 and 1999 showed that levels of contaminants (dieldrin, chlordane, alachlor, trifluralin, and chlorpyrifos) in composite samples of whole fish common carp (98 & 99) and common carp fillets (98) were all less than 1/2 of the respective FDA action levels or DNR levels of concern. Thus, fish consumption uses were assessed as fully supported. The level of use support for the Class C (drinking water) uses was downgraded from "fully supported" to "not supported" due to (1) comments received in 1998 from the Des Moines Water Works (letter of October 16, 1998) on nitrate impairments of this river reach and EPA's subsequent addition (September 23, 1999) of this waterbody segment to Iowa's 1998 Section 303(d) and (2) due to 1998-99 monitoring data from the ISU/ACOE station downriver from Saylorville Dam showing that 15 of 47 samples (32%) collected during this period exceeded the U.S. EPA MCL for nitrate (DNR's assessment methodology states that greater than 25% violation of the nitrate MCL suggests nonsupport of drinking water uses). For more information on ISU/ACOE water quality monitoring in this river reach, see Lutz et al. (1999) and Lutz (2000).

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

DES MOINES R

-- Raccoon R. to Saylorville Dam

Waterbody ID No.: IA 04-UDM-0010

Subsegment No.: 3

Subsegment Description: I-80 bridge to Saylorville Dam

Subsegment Length: 12 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring at Sycamore Access conducted by Iowa State Univ. as part of the ACOE's Des Moines R./Saylorville Res./Red Rock Res. water quality study. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
 Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, assessed as NS due to fish consumption advisory issued in Dec 1989 due to high levels of chlordane in fish from near DSM WWTP. Although 4 of 22 samples violated Class B WQC for Hg, did not use data due to uncertainties regarding analysis for Hg.

For 1994 report, assessed as FST due to lifting of the fish consumption advisory in April 1993, presence of only very low levels of fish contaminants in samples collected in 1992 and 1993 by ISU, lack of violations of Class B WQC (except Hg: 5 of 8 samples with violations), extremely high use for fishing, and due to known threats of agricultural NPS.

For 1996 report, assess Class B aquatic life use as FST due to lack of any violations for Class B WQC (except for Hg and Cu) and due to continued extremely high use of the tailwater of Saylorville Dam for fishing. Assess Class B fish consumption use as FS due to very low levels of fish contamination as reported by the ISU monitoring network: all levels of pesticides and mercury << 1/2 FDA action levels.

For the 1998 report, assess support of the Class B(WW) aquatic life uses as FST: the only violation of Class B(WW) WQ criteria for conventional or toxic pollutants were for two toxic metals: copper & mercury. One of 12 samples collected from Oct 94 to Sep 97 exceeded the chronic WQ criterion for copper (sample was collected on Oct 11, 1994). Ten of 11 samples collected during this period exceeded the Class B(WW) chronic criterion for mercury. Due to (1) problems with analysis of mercury in water (see pages 3-58 and 3-99 to 3-100 of Iowa's 1996 Section 305(b) report), and (2) historical lack of high levels of mercury in fish tissue samples from this reach of river, data for mercury in water were not used to develop the assessment of support of the Class B(WW) aquatic life uses. According to Section 305(b) assessment guidelines, the single violation of the WQ criterion for copper does not suggest a WQ impairment. Thus, the Class B(WW) aquatic life uses were assessed as FST with the threat from high levels of toxic metals (copper). Fish contaminant monitoring conducted in this reach by ISU during 1996 & 97 showed that levels of pesticides in composite samples of 3-yr old whole-fish carp were well below 1/2 of the respective FDA action levels; thus, fish consumption uses were assessed as FS. This reach of the Des Moines River remains extremely popular for fishing.

For the 2000 report: SUMMARY: Continue to assess support of the Class B(WW) aquatic life uses as fully supported/threatened. Fish consumption uses remain assessed as fully supported. EXPLANATION: The assessments of support of the beneficial uses are based on results of water quality monitoring conducted by Iowa State University (under contract with the U.S. Army Corps of Engineers) as part of the Des Moines River Water Quality Study (see Lutz et al. 1999 and Lutz 2000). Results from the ISU/ACOE monitoring station located approximately two miles downstream from Saylorville Dam (=Sycamore Access) suggest that the Class B(WW) aquatic life uses are fully supported/threatened (=FST). No violations of Class B(WW) water quality criteria for conventional parameters occurred in the 47 samples collected at this monitoring station during the 1998-99 biennial period. In the nine samples analyzed for toxic metals, the only violations were for mercury: all nine samples analyzed for toxic metals during the 1998-99 biennial period contained levels of dissolved mercury above the Iowa WQ criterion of 0.05 ug/l. Due, however, to (1) problems with analysis of mercury in water (see pages 3-58 and 3-99 to 3-100 of Iowa's 1996 Section 305(b) report) and (2) the historical lack of high levels of mercury in fish tissue samples from this reach of river, data for mercury in water were not used to assess support of the Class B(WW) aquatic life uses of this river reach. In addition, a recent study (Montgomery and Watson 1998) was conducted to determine whether levels of mercury in the vicinity of Des Moines presented a water quality problem. Study results showed that (1) average levels of mercury in the Des Moines River ranged from 2.7 to 2.8 ng/l and were well below the Iowa water quality criterion of 50 ng/l; (2) levels of mercury in effluent of the Des Moines wastewater treatment plant averaged 3.30 ng/l but account for only 1.7 percent of the total river mercury load leaving the city of Des Moines, (3) mercury levels in Des Moines River fish (maximum of 0.179 ppm) were well below the FDA action level of 1.0 ppm, (4) most of the mercury loading seen at Des Moines comes from upstream areas in the Des Moines and especially the Raccoon river basins, and (5) river mercury concentrations were strongly correlated to total suspended solids concentrations. Due to continuing uncertainty regarding the significance of mercury levels in the Des Moines River, the assessment of support of the Class B(WW) aquatic life uses was downgraded from "fully supported" to "fully supported / threatened." Fish contaminant monitoring conducted downstream from Saylorville Reservoir by ISU in 1998 and 1999 showed that levels of contaminants (dieldrin, chlordane, alachlor, trifluralin, and chlorpyrifos) in composite samples of whole fish common carp (98 & 99) and common carp fillets (98) were all less than 1/2 of the respective FDA action levels or DNR levels of concern. Thus, fish consumption uses were assessed as fully supported. For more information on ISU/ACOE water quality monitoring in this river reach, see Lutz et al. (1999) and Lutz (2000).

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Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

DES MOINES R

-- up end Sayl. Res to Boone R.

Waterbody ID No.: IA 04-UDM-0030

Subsegment No.: 1

Subsegment Description: up end Sayl. Res to Fraser Dam, Boone Co

Subsegment Length: 56 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring NW of Boone conducted by Iowa State Univ. as part of the ACOE's Des Moines R./Saylorville Res./Red Rock Res. water quality study. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, aquatic life uses assessed as FST due to 4 of 22 samples violating the Class B WQC for Hg and due to problems with analysis for Hg.

For 1994 report, again had relatively high frequency of violations of Hg criterion (6 of 8 samples); however, again assessed as FST due to analytical uncertainties. Reach is heavily fished, but is threatened by siltation from ag. NPS.

For 1996 report, Class B fish consumption use not assessed due to lack of monitoring. No violations of Class B WQ criteria except for copper (2 of 8 samples= 25% viol) and mercury (7 of 9 samples =78% viol). Due to lack of known sources and due to analytical uncertainties, disregard metals data and assess Class B(WW) aquatic life uses as FST. DNR booklet "Iowa Float Trips" (DNR 1986?: 12-13) describes the numerous high quality areas for fishing in this reach, thus suggesting full support of the Class B(WW) aquatic life uses.

For 1998 report, fish consumption uses not assessed due to lack of monitoring. No violations of Class B(WW) WQ criteria for conventional pollutants occurred in the 46 samples collected during the 1996-97 period. Over a three year period (October 1994-September 1997), the following violation of Class B(WW) toxics occurred at this station: 1 of 12 samples violated the chronic criterion for copper, and 10 of 11 samples violated the chronic criterion for mercury. Section 305(b) reporting guidelines allow one violation of chronic or acute criteria for toxic metals in 10 or more samples collected over at 3-year period in waters assessed as FST. Thus, the 1 violation of the criterion for copper does not suggest an impaired condition. The high percentage of samples that violate the chronic Class B(WW) criterion for mercury (91%) suggests a water quality impairment. However, due to concerns with validity of data for trace levels of metals (especially mercury), and due to lack of high levels of mercury in fish tissue samples collected both upstream and downstream from this reach, the data for mercury were not considered for this assessment. Based on this information, assess support of the Class B(WW) aquatic life uses as FST due to known threats from agricultural nonpoint sources.

For the 2000 report: SUMMARY: Continue to assess support of the Class B(WW) aquatic life uses as fully supported/threatened. Fish consumption uses were "not assessed." EXPLANATION: The assessments of support of the beneficial uses are based on results of water quality monitoring conducted at the CoR. E-26 bridge northwest of Boone, IA, by Iowa State University (under contract with the U.S. Army Corps of Engineers) as part of the Des Moines River Water Quality Study (see Lutz et al. 1999 and Lutz 2000). The only violation of Class B(WW) WQ criteria for conventional parameters at the ISU/ACOE monitoring station was in one of the 47 samples analyzed for dissolved oxygen during the biennial period. The sample collected on July 6, 1999, contained 3.87 mg/l of dissolved oxygen; this level violated the criterion of 5.0 mg/l. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), the percentage of violations of the dissolved oxygen criterion at this station (2%) does not suggest a water quality impairment. Levels of pH and ammonia-nitrogen did not violate the respective Class B(WW) criteria during the biennial period (n=47). Due to the violation of the WQ criterion for dissolved oxygen this river reach in July 1999, the support of the Class B(WW) aquatic life uses was assessed as "fully supported / threatened." This assessment ("threatened") presumes a minor impact to water quality and does not indicate a declining water quality trend. In the nine samples analyzed for toxic metals (cadmium, copper, lead, mercury and zinc), the only violations were for mercury: all nine samples analyzed for toxic metals during the 1998-99 biennial period contained levels of dissolved mercury above the Iowa WQ criterion of 0.05 ug/l. Due, however, to (1) problems with analysis of mercury in water (see pages 3-58 and 3-99 to 3-100 of Iowa's 1996 Section 305(b) report) and (2) the historical lack of high levels of mercury in fish tissue samples from upstream (Dolliver State Park) and downstream (Saylorville Reservoir) from this reach of river, data for mercury in water were not used to assess support of the Class B(WW) aquatic life uses of this river reach. Due to continuing uncertainty regarding the significance of mercury levels in the Des Moines River, the support of the Class B(WW) aquatic life uses was assessed as "fully supported / threatened." This assessment ("threatened") presumes a minor impact to water quality and does not indicate a declining water quality trend. For more information on ISU/ACOE water quality monitoring in this river reach, see Lutz et al. (1999) and Lutz (2000). Fish consumption uses were not assessed due to lack of recent monitoring information. However, EPA/DNR (RAFT) fish tissue monitoring in 1999 on the Des Moines River upstream from this reach at Dolliver State Park showed very low levels of all contaminants in composite samples of filets from common carp and freshwater drum. Levels of most contaminants were below the laboratory detection level, and levels of the detected contaminants were less than 1/2 of respective FDA action levels and DNR levels of concern.

Rivers and Streams: Des Moines River Basin

*Upper Des Moines River Subbasin***DES MOINES R**

-- up end Sayl. Res to Boone R.

Waterbody ID No.: IA 04-UDM-0030

Subsegment No.: 2

Subsegment Description: Fraser Dam (Boone) to Boone R (Webster)

Subsegment Length: 56 miles

ASSESSMENT COMMENTS:

Assessment is based on results of monitoring conducted NW of Boone by Iowa State Univ. as part of the ACOE's Des Moines R./Saylorville Res./Red Rock Res. water quality study. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
 Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, aquatic life uses assessed as FST due to 4 of 22 samples violating the Class B WQC for Hg and due to problems with analysis for Hg.

For 1994 report, again had relatively high frequency of violations of Hg criterion (6 of 8 samples); however, again assessed as FST due to analytical uncertainties. Reach is heavily fished, but is threatened by siltation from ag. NPS.

For 1996 report, Class B fish consumption use not assessed due to lack of monitoring. No violations of Class B WQ criteria except for copper (2 of 8 samples= 25% viol) and mercury (7 of 9 samples =78% viol). Due to lack of known sources and due to analytical uncertainties, disregard metals data and assess Class B(WW) aquatic life uses as FST. The DNR booklet "Iowa Float Trips" (DNR 1986) describes numerous opportunities for fishing in the deeper holes and riffles present in this reach of the Des Moines River.

For the 1998 report continue to assess support of the Class B(WW) aquatic life uses as FST, and continue consider the fish consumption uses as "not assessed." See the assessment developed for the next waterbody subsegment downstream (IA 04-UDM-0030-1) for details.

For the 2000 report: **SUMMARY:** The assessment developed for the downstream reach (upper end of Saylorville Reservoir to Fraser Dam, Boone Co.) will be used: continue to assess support of the Class B(WW) aquatic life uses as "fully supported/threatened." Fish consumption uses were not assessed. **EXPLANATION:** The assessments of support of the beneficial uses are based on results of water quality monitoring conducted by Iowa State University (under contract with the U.S. Army Corps of Engineers) as part of the Des Moines River Water Quality Study (see Lutz et al. 1999 and Lutz 2000). The only violation of Class B(WW) WQ criteria for conventional parameters at the ISU/ACOE monitoring station NW of Boone was in one of the 47 samples analyzed for dissolved oxygen during the biennial period. The sample collected on July 6, 1999, contained 3.87 mg/l of dissolved oxygen; this level violated the criterion of 5.0 mg/l. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), the percentage of violations of the dissolved oxygen criterion at this station (2%) does not suggest a water quality impairment. Levels of pH and ammonia-nitrogen did not violate the respective Class B(WW) criteria during the biennial period (n=47). Due to the violation of the criterion for dissolved oxygen in this river reach during the biennial period, the support of the Class B(WW) aquatic life uses was assessed as "fully supported / threatened." This assessment ("threatened") presumes a minor impact to water quality and does not indicate a declining water quality trend. In the nine samples analyzed for toxic metals (cadmium, copper, lead, mercury and zinc), the only violations were for mercury: all nine samples analyzed for toxic metals during the 1998-99 biennial period contained levels of dissolved mercury above the Iowa WQ criterion of 0.05 ug/l. Due, however, to (1) problems with analysis of mercury in water (see pages 3-58 and 3-99 to 3-100 of Iowa's 1996 Section 305(b) report) and (2) the historical lack of high levels of mercury in fish tissue samples from upstream (Dolliver State Park) and downstream (Saylorville Reservoir) from this reach of river, data for mercury in water were not used to assess support of the Class B(WW) aquatic life uses of this river reach. Due to continuing uncertainty regarding the significance of mercury levels in the Des Moines River, the support of the Class B(WW) aquatic life uses was assessed as "fully supported / threatened." This assessment ("threatened") presumes a minor impact to water quality and does not indicate a declining water quality trend. For more information on ISU/ACOE water quality monitoring in this river reach, see Lutz et al. (1999) and Lutz (2000). Fish consumption uses were not assessed due to lack of recent monitoring information. However, EPA/DNR (RAFT) fish tissue monitoring in 1999 on the Des Moines River upstream from this reach at Dolliver State Park showed very low levels of all contaminants in composite samples of filets from common carp and freshwater drum. Levels of most contaminants were below the laboratory detection level, and levels of the detected contaminants were less than 1/2 of respective FDA action levels and DNR levels of concern.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

DES MOINES R

-- Boone R to dam at Ft. Dodge

Waterbody ID No.: IA 04-UDM-0040

Subsegment No.: 1

Subsegment Description: Boone R to W line S15,T88N,R28W Webster

Subsegment Length: 32 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring conducted in 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Not assessed

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed with monitoring data for the 1992 report.

For the 1994 report, all contaminants from sample of carp filets were < 1/2 the FDA action levels; thus, assess as FS. Due to known threats from agricultural NPS, assess overall support as FST.

For 1996 report, continue to use data from 1993 RAFT sample of carp filets from Dolliver State Park to assess Class B fish consumption use as FS. Continue to assess Class B(WW) aquatic life uses as FST due to known threats from agricultural NPS.

For the 1998 report, continue to use the assessment of support of the fish consumption uses (=FS) developed for the 1994 report. Due to lack of either chemical or biological information on which to base an assessment of support of the designated aquatic life uses, changed the assessment of support of the Class B(WW) uses to "not assessed."

For the 2000 report: SUMMARY: Continue to consider the Class B(WW) aquatic life uses as "not assessed"; continue to assess support of the fish consumption uses as "fully supported." EXPLANATION: Due to the lack of either chemical or biological monitoring data for this river reach, continue to consider the Class B(WW) aquatic life uses as "not assessed." EPA/DNR fish tissue (RAFT) monitoring in 1999 on the Des Moines River at Dolliver State Park showed very low levels of all contaminants in composite samples of filets from common carp and freshwater drum. Levels of most of the contaminants were below the laboratory detection level, and levels of the detected contaminants were less than 1/2 of respective FDA action levels and DNR levels of concern. Thus, assess support of fish consumption uses as "fully supported."

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

DES MOINES R

-- Boone R to dam at Ft. Dodge

Waterbody ID No.: IA 04-UDM-0040

Subsegment No.: 2

Subsegment Description: W In S15,T88N,R28W (Webster) to FD dam

Subsegment Length: 32 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring in 1999. See attached document for details. Fish kill at Ft. Dodge in Aug. 1995.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Not assessed

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed with monitoring data for the 1992 report.

For the 1994 report, all contaminants from sample of carp filets were < 1/2 the FDA action levels; thus, assess as FS. Due to known threats from agricultural NPS, assess overall support as FST.

For 1996 report, continue to use data from 1993 RAFT sample of carp filets from Dolliver State Park to assess Class B fish consumption use as FS. Continue to assess Class B(WW) aquatic life uses as FST due to known threats from agricultural NPS. The DNR publication "Iowa Float Trips" (DNR 1986?: 11-13) provides details on the high quality of this reach of river for fishing and for canoeing.

For the 1998 report, continue to use the assessment of support of the fish consumption uses (=FS) developed for the 1994 report. Due to the lack of either chemical or biological information on which to base an assessment of support of the designated aquatic life uses, changed the assessment of support of the Class B(WW) uses from FST to "not assessed." A fish kill was reported at Fort Dodge on August 28, 1995; approximately 30 fish were reported killed. The kill was attributed to "natural" causes.

For the 2000 report: SUMMARY: Continue to consider the Class B(WW) aquatic life uses as "not assessed"; continue to assess support of the fish consumption uses as "fully supported." EXPLANATION: Due to the lack of either chemical or biological monitoring data for this river reach, continue to assess support of the Class B(WW) aquatic life uses as "not assessed." The most recent fish kill in this river reach occurred on August 28, 1995 (see assessment for the 1998 report above). According to DNR's Section 305(b) methodology, however, the absence of fish kills within the most recent three-year period (1997-1999) indicates no fish kill-related impairments. EPA/DNR fish tissue (RAFT) monitoring in 1999 on the Des Moines River at Dolliver State Park showed very low levels of all contaminants in composite samples of filets from common carp and freshwater drum. Levels of most of the contaminants were below the laboratory detection level, and levels of the detected contaminants were less than 1/2 of respective FDA action levels and DNR levels of concern. Thus, assess support of fish consumption uses as "fully supported."

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

DES MOINES R

-- E. Fk Des Moines to L. Nakomis

Waterbody ID No.: IA 04-UDM-0070

Subsegment No.: 0

Subsegment Description: E Fk Des Moines to Humboldt Dam-L Nakomi

Subsegment Length: 4.5 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR quarterly monitoring south of Humboldt during FY98 and FY99. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had no violations of Class B WQC; thus assessed as FS (impacts of NPS, however, were not included in this assessment).

For 1994 report, use same information, but downgraded to FST to account for known threats of agricultural nonpoint sources.

For 1996 report, considered data from 1991 quarterly monitoring station too old to be useful for 305(b) assessments. In order to provide an assessment for this major interior river in Iowa, information from the DNR publication "Iowa Float Trips" (DNR 1986?: 9-10) was used to assess support of the Class B(WW) aquatic life uses as FST due to the following description: the reach of the Des Moines River in Humboldt County "is very productive from a fisheries aspect. Numerous riffle areas, three dams, vertical limestone bluffs, coupled with the river's natural meandering through heavily-timbered floodplains, provide excellent game fish habitat and scenic interest unequaled throughout the upper portion of the West Fork [Des Moines River]."

For the 1998 report, changed the assessment of support of the Class B(WW) aquatic life uses from FST to "not assessed" due to the lack of either chemical or biological information for this waterbody segment upon which to base an assessment.

For the 2000 report: SUMMARY: Class B(WW) aquatic life uses were assessed as "fully supported." EXPLANATION: Based on results of monitoring at the DNR quarterly water quality monitoring station located south of Humboldt (station 444061), the Class B(WW) aquatic life uses were assessed as "fully supporting" due to lack of violations of Class B(WW) water quality criteria (1) for dissolved oxygen, pH, and ammonia-nitrogen in the eight samples and (2) for toxic metals in the two of these samples collected during the 1998-1999 biennial period. This assessment was based on results of quarterly monitoring. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to increase the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring began at the Humboldt station in October 1999.

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Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

BEAVER CR

-- Slough Cr-Dallas to headwaters

Waterbody ID No.: IA 04-UDM-0120

Subsegment No.: 0

Subsegment Description: Slough Cr to trib S29,T84N,R28W Boone Co

Subsegment Length: 30 miles

ASSESSMENT COMMENTS: 1992 SUA: habscr/fshscr=19/12 (shock); 1994 Biocriteria: Fish IBI=43 (fair), BM-IBI=57 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form ind. below avg. hab qual. Little diversity of substr. and few pool/riffle sequences observed. Silt and sand substr. are dominant. Frequent pasture use impacts including frequent str. bank erosion and stream widening noted. Extensive channeliz. in headwater reaches of stream and trib. Fairly good diversity of fish observed. Under more stressful conditions, stream may not support existing fish community.

For the 1996 report: Used data from 1994 biocriteria sampling location. Fish and habitat metrics from stream use assessment protocol were applied to the data to make the determination. Sampling site was impacted by cattle grazing. Stream was wide and shallow, with very little riparian vegetation.

For the 1998 report, used a review of the field sheet from the October 1992 DNR stream use assessment at Beaver, and the results of the October 1994 biocriteria sampling at the same location, to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to (1) presence of relatively diverse fish communities during both samplings (species/families: 15/4, 17/4) and (2) presence of a majority of the expected fish taxa (9 of 11 for both samplings) for streams in the Des Moines Lobe subecoregion (47b). As noted in the assessments developed for the 1994 and 1996 Section 305(b) reports (see above), the physical characteristics of this stream segment are impacted by frequent channel alterations, including channelization, pasturing of the riparian area, and streambank erosion. Despite these impacts, this stream supports a relatively diverse fish community that meets expectations for Class B(LR) streams in this subecoregion.

For the 2000 report, the assessment was based on data collected in 1994 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 43 (fair) and the BM-IBI score was 57 (fair). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

LITTLE BEAVER CR

-- mouth (Dallas) to headwaters

Waterbody ID No.: IA 04-UDM-0124

Subsegment No.: 0

Subsegment Description: mouth to trib S29,T82N,R27W Boone Co.

Subsegment Length: 4.8 miles

ASSESSMENT COMMENTS: 1992 SUA: habscr/fshscr=24/13 (shock); 1994 Biocriteria: Fish IBI=42 (fair), BM-IBI=74 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates fairly good habitat quality. Some diversity of substr. and pool/riffle sequences observed. Meandering channel and woody debris snags add to quality of habitat. Undisturbed timber riparian conditions observed. Channel has been widened as a result of high flows which may be related to extent of tile drainage and channeliz. in the watershed. Rel. diverse fish community including intolerant species and game fish (s.m. bass and n. pike) observed. Aquatic community is probably threatened by habitat degradation resulting from extreme flows.

For 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report and supported by the 1994 DNR biocriteria survey (=FST).

For the 1998 report, used a review of the field sheet from the October 1992 DNR stream use assessment SW of Woodward, and the results of the 1994 pilot biocriteria sampling at the same location, to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of relatively diverse fish communities (species/families: 15/4, 16/5) for streams in the Des Moines Lobe subcoregion, (2) presence of a majority of the expected fish taxa (8 of 11 and 9 of 11) for streams in this subcoregion, and (3) indications on field sheet from the 1992 assessment of above average habitat quality. The 1992 field sheet does not identify any significant threats to the continued support of the Class B(LR) uses other than some channel widening due to high flow scouring. In general, the riparian area of this stream is in good shape.

2000 report: The DNR/EPD stream use assessment project data collected in 1992 were not used to determine the degree of aquatic life use support for this waterbody segment because the data are more than five years old, and no longer considered current. The 2000 305b assessment was based on data collected in 1994 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI and BM-IBI scores were compared to biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The 305b assessment criteria were determined by statistical analysis of data collected at stream ecoregion reference sites from 1994-1998. The F-IBI score 42(fair) was below the assessment criterion, and the BM-IBI score 74(good) was above the impairment criterion. The aquatic life use support status was assessed as Partially Supporting (=PS). The stream habitat rating was "good" for the reach of stream sampled. A slight impairment of the fish community is indicated by the F-IBI. Habitat alterations and lack of low flow stability associated with channelization and tiling in the watershed are suspected causes of impairment. Resampling scheduled for 2000 field season should provide additional insight into status of biological community.

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Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

ROCK CR

-- mouth (Polk) to headwaters

Waterbody ID No.: IA 04-UDM-0129

Subsegment No.: 0

Subsegment Description: mo to Hwy 415, S21,T80N,R24W Polk Co.

Subsegment Length: 3.0 miles

ASSESSMENT COMMENTS: Assessment is based on results of a September 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report; stream not designated for Class B(LR) aquatic life uses until 1995.

For the 1996 report, used results of the September 1994 DNR stream use assessment west of Ankeny to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (26) much better than the overall median habitat score for DNR stream use assessments, (2) indications on field sheet of very diverse substrates, numerous pool/riffle sequences, no channel alterations, and relatively stable stream banks, (3) diverse fish community for small streams of central Iowa, and (4) fish score (12) better than the 75th percentile score for DNR stream assessments made with seines. Most likely threat to support of Class B(LR) uses is suburban/rural residential development.

For the 1998 report, used a review of the field sheet from the September 1992 DNR stream use assessment in Polk County to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (11 species from 2 families) for streams in the Des Moines Lobe subcoregion (47b) despite difficulty in sampling (seining) due to snags and numerous boulders, (2) presence of a majority of the expected fish taxa (8 of 11) for streams in this subcoregion, and (3) exceptional quality of aquatic habitat (see above assessment developed for the 1996 305(b) report). Continue to presume that the primary threat to the continued support of the Class B(LR) uses is suburban and rural residential development.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the September 1994 DNR stream use assessment west of Ankeny. The results of the September 1994 DNR stream use assessment-upon which the previous assessment of the Class B(LR) uses was based-are approximately 5 years old and thus can be used to assess current water quality conditions.

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

SKILLET CR

-- mouth (Webster) to headwaters

Waterbody ID No.: IA 04-UDM-0170

Subsegment No.: 0

Subsegment Description: mo to trib S14,T86N,R28W Webster Co.

Subsegment Length: 6.9 miles

ASSESSMENT COMMENTS: 1992 SUA: habscr/fshscr=29/11 (seine). 1998 Biocriteria: (upstr.STP) Fish IBI=51 (good), BM-IBI= 58(good); (dwstr.STP) Fish IBI=22 (poor), BM-IBI= 15(poor).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting

Aquatic Life Support -- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates above avg. habitat quality. Very diverse substr. and numerous pool/riffle sequences observed. Outstanding undisturbed timber riparian setting in lower reaches of stream. Boulder strewn stream channel and occasional woody debris snag provide cover and structure for aquatic community. Moderately diverse fish community observed despite difficulty seining over very uneven stream bottom.

For the 1996 report: used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report.

For the 1998 report, downgraded the assessment of support of the Class B(LR) uses from FST to PS. Based on information from DNR Field Office 2 in Mason City, the Dayton wastewater treatment facility is having an adverse impact of the water quality of Skillet Creek due to high levels of ammonia and BOD in effluent discharged to the stream. DNR is taking enforcement actions to correct these problems. Additional monitoring is needed to better determine the nature of the impacts of the high levels of ammonia and BOD on the aquatic life of Skillet Creek.

For the 2000 report, the assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria project. This stream reach was sampled as part of follow-up monitoring to better identify suspected water quality impacts (see assessment for the 1998 report above). A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score downstream from the Dayton wasteawter treatment plant was 22 (poor); the BM-IBI score was 15 (poor). Sampling upstream from the Dayton WWTP showed both IBI values in the "good" category (F-IBI=58; MB-IBI=58). Based on poor water quality downstream from the WWTP, the aquatic life use support of this stream reach was assessed as not supporting (=NS). These scores and rankings were based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

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Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

BOONE R

-- mouth-Webster to White Fox Cr

Waterbody ID No.: IA 04-UDM-0180

Subsegment No.: 1

Subsegment Description: mouth to Brewers Cr at Webster City

Subsegment Length: 26 miles

ASSESSMENT COMMENTS: Assessment is based on (1) results of a DNR biocriteria sampling in 1998 and (2) results of fish tissue (RAFT) monitoring in 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996 report: No viols of Class B WQ criteria in 8 samples collected as the DNR quarterly monitoring station NE of Stratford. Levels of all contaminants in fillet samples from smallmouth bass and channel catfish collected for 1994 RAFT were less than one-half of FDA action levels (=FS). Reach very popular for canoeing and fishing.

For 1998 report: Continue to use the assessment of support of the Class B(WW) aquatic life uses (=FST) and fish consumption uses (=FS) developed for the 1996 report. The March/April 1998 edition of the Iowa Conservationist notes that Boone River downstream from Webster City support good numbers of channel catfish.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were assessed as "fully supported / threatened." Fish consumption uses remain assessed as "fully supported." EXPLANATION: The assessment of support of the Class B(WW) uses developed for previous reports (see above) was based on results from the DNR quarterly water quality monitoring station near Stratford (station 438056). Data from this station, however, were last collected from October 1993 through September 1995 and are thus considered too old (greater than five years) for characterizing current water quality conditions. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Stratford station began in October 1999. Results from this monitoring will allow development of an updated assessment of support of beneficial uses for the 2002 report. The current assessment was based on results of a DNR/UHL biocriteria sampling in September 1998. Based on a comparison to results of ecoregion reference site sampling, the aquatic life uses were assessed as "fully supported / threatened." Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1994 near Webster City (see assessment developed for the 1996 report above).

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

WHITE FOX CR

-- mouth (Hamilton) to headwaters

Waterbody ID No.: IA 04-UDM-0220

Subsegment No.: 0

Subsegment Description: mouth to trib S36,T91N,R25W Wright Co.

Subsegment Length: 17 miles

ASSESSMENT COMMENTS: Habscr/fshscr=22/10, stream assmt. site; 26/12; Avg.1994 - 1998 Biocriteria: Fish IBI=58 (good), BM-IBI=67 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates fairly good habitat quality. A little diversity of substr. and a few pool/riffle sequences observed. Frequent channeliz. noted. Stream was assessed at the B(LR) - general use boundary. Better habitat has been observed in middle and lower reaches of B(LR) where stream is generally meandering. Very good fish species richness observed but rel. few species with good number of individuals. Game fish species observed (n.pike and ch. catfish). Fish kill investig. in 1988 documented populations of game fish (r. bass and s.m. bass) and suggests a w.q. impact from livestock waste.

For the 1996 report: Used data from seasonal biocriteria sampling site (47B9) to make use support determination. Fish and habitat metrics from stream use assessment protocol were applied to the data.

For the 1998 report, used results of DNR seasonal biocriteria samplings in May, Sept., & Nov. 1996 and Aug. & Nov. 1997 to assess support of the Class B(LR) aquatic life uses as FS due to (1) presence of a very diverse fish community of from 17 to 25 species from 5 families, (2) presence of all the expected fish taxa (11 of 11) for streams in the Des Moines Lobe subecoregion, and (3) lack of violations of Class B(LR) WQ criteria in the five samples collected during the five biocriteria sampling events. A fish kill occurred on June 13, 1996, affecting approximately 12 miles of stream downstream from Clarion in Wright Co. killing an estimated 45,000 fish. This kill was caused by an accidental release of ammonia from an agricultural chemical dealer. The aquatic life at the DNR biocriteria site was apparently not affected by this fish kill.

For the 2000 report, the assessment was based on data from multiple samplings conducted from 1994-1998 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The average F-IBI score for the 1994-1998 period was 58 (good) and the average BM-IBI score was 67 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

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Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

BRUSHY CR

-- mouth (Webster) to headwaters

Waterbody ID No.: IA 04-UDM-0270

Subsegment No.: 2

Subsegment Description: W ln S16,T88N,R27W to trib S34,T89N,R27W

Subsegment Length: 9.5 miles

ASSESSMENT COMMENTS: Assessment is based on results of a November 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the November 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as PS due to (1) habitat score (16) much worse than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of little substrate diversity, no pool/riffle development, and extensive channel alterations, (3) fish score (9) below the 75th percentile score for stream use assessments made with seines, (4) fish community of mostly (4 of 6 spp) pollution-tolerant cyprinids (e.g., bluntnose minnow, fathead minnow, bigmouth shiner, and creek chub), and comment on field sheet ("no real habitat to sample").

For the 1998 report, continued to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=PS). Follow-up monitoring is needed to determine the status of the aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired. Review of field sheet from the November 1994 DNR stream use assessment shows a relatively depauperate fish community of 6 species from 2 families for streams in the Des Moines Lobe subcoregion (47b). Only 4 of the 11 fish taxa expected in streams of the subregion were present. Poor results of fish sampling may have been due to late season/cold water conditions. In addition, collection was made within one mile of the upstream boundary of the Class B(LR) reach.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1996 report (see above). The results of the November 1994 DNR stream use assessment-upon which the previous assessment of the Class B(LR) uses was based ("partially supported")-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

PRAIRIE CR

-- mouth-Webster to headwaters

Waterbody ID No.: IA 04-UDM-0280

Subsegment No.: 0

Subsegment Description: mouth to DD 29 S25,T88N,R29W Webster Co.

Subsegment Length: 9.4 miles

ASSESSMENT COMMENTS: June 1996 SUA: habscr/fishscr: 27/11 (seine). 1996 biocriteria: IBI=38, 23 spp., 6 fams. 1996 Biocriteria: Fish IBI=70 (good), BM-IBI=70 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the June 1992 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (27) much better than the overall median score (22) for DNR stream use assessment, (2) indications on field sheet of very diverse substrates, numerous pool/riffle sequences, only isolated channel alterations, and very stable stream banks, (3) comments on field sheet noting high quality aquatic habitat, and (4) fish score (11) better than the 75th percentile score (10) for stream assessments made with seines (seining efficiency lowered by uneven stream bottom and woody debris).

For the 1998 report, used results of the July 1996 DNR biocriteria sampling NW of Lehigh at Dolliver State Park to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) existence of very diverse fish community of 23 species from 6 families, (2) presence of nearly all the expected fish taxa for streams in the Des Moines Lobe subcoregion (10 of 11), and (3) lack of violations of Class B(LR) water quality criteria in the sample collected during biocriteria sampling.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 70 (good) and the BM-IBI score was 70 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

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Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

SOLDIER CR

-- mouth-Webster to headwaters

Waterbody ID No.: IA 04-UDM-0290

Subsegment No.: 0

Subsegment Description: mouth to trib S26,T90N,R28W Webster Co.

Subsegment Length: 5.4 miles

ASSESSMENT COMMENTS: Assessment is based on results of a November 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the November 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (24) better than the overall score (22) for DNR stream use assessments, (2) indication on field sheet of very diverse substrates, several pool/riffle sequences, only isolated channel alterations, and relatively stable stream banks, (3) fish score (11) better than the 75th percentile score (10) for assessments made with seines, and (4) comments on field sheet ("some areas too rocky to sample"). Fish community composed primarily of pollution-tolerant cyprinids (e.g., creek chub, bluntnose minnow, bigmouth shiner).

For the 1998 report, used a review of the field sheet from the November 1994 DNR stream use assessment in Webster County to downgrade the assessment of support of the Class B(LR) aquatic life uses from FST to PS due to (1) presence of a relatively depauperate fish community (5 species from 2 families) for streams in the Des Moines Lobe subcoregion and (2) presence of less than a majority of the expected fish taxa (4 of 11) for streams in this subregion. Relatively poor results of the sampling for fish may have been influenced, as noted on the field sheet, by rocky substrates and/or by sampling late in the season (early November). Nonetheless, follow-up monitoring is needed to better define the status of the aquatic communities of this stream and to determine the degree to which the Class B(LR) uses may be impaired. Field sheet indicates above average aquatic habitat with no significant impacts to the physical characteristics of the stream noted.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1996 report (see above). The results of the November 1994 DNR stream use assessment-upon which the previous assessment of the Class B(LR) uses was based ("partially supported")-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

LIZARD CR

-- mouth-Webster to N Br Lizard

Waterbody ID No.: IA 04-UDM-0300

Subsegment No.: 1

Subsegment Description: mouth to trib S31,T90N,R30W Webster Co.

Subsegment Length: 33 miles

ASSESSMENT COMMENTS: Sept. 1994 SUA: habscr/fshscr: 28/12 (seine). 1996 biocriteria: IBI=44, 23 spp., 5 fams. 1996 Biocriteria: Fish IBI=67 (good), BM-IBI=75 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1994 DNR stream use assessment approx 3 miles W of Ft. Dodge to assess support of the Class B(WW) aquatic life uses as FST due to (1) habitat score (28) much better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of very diverse substrates, several pool/riffle sequences, no channel alterations (very rare for DNR stream habitat assessment), and relatively stable banks, (3) fish score (12) better than the 75th percentile score (10) for assessments made with seines, and (4) field sheet comment ("many areas too deep, wide, rocky to seine"). DNR fisheries survey approx 3 miles further upstream supports the September 1994 stream use assessment.

For the 1998 report, used results of the September 1996 DNR biocriteria sampling to update the assessment of support of the Class B(WW) aquatic life uses; based on results of this sampling, assess support of the Class B(WW) uses as FST due to (1) presence of a relatively diverse fish community of 23 species from 5 families, (2) presence of a majority of the expected fish taxa (7 of 11*) for streams in the Des Moines Lobe subcoregion, (3) lack of violations of Class B(WW) WQ criteria in the sample collected during biocriteria sampling, and (4) presence of game fish species (channel catfish). (*Several of the missing fish taxa are small stream species (e.g., blacknose dace and creek chub) that occur less frequently in larger streams such as this reach of Lizard Cr.)

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 67 (good) and the BM-IBI score was 75 (good). The aquatic life use support was assessed as fully supported (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

LIZARD CR

-- mouth-Webster to N Br Lizard

Waterbody ID No.: IA 04-UDM-0300

Subsegment No.: 2

Subsegment Description: trib S31,T90N,R30W to N Br Lizard Cr

Subsegment Length: 33 miles

ASSESSMENT COMMENTS: 1994 SUA: habscr/fshscr: 23/12 (seine).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (23) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of only isolated channel alterations, pools formed by accumulations of large boulders, (3) fish score (12) better than the 75th percentile score for stream assessments made with seines, and (4) a relatively diverse fish community (13 species; 3 families). Continued support of uses threatened by stream channelization.

For the 1998 report, used a review of the field sheet from the September 1994 DNR stream use assessment near Manson in Webster County to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) moderately diverse fish community (13 species from 5 families) for streams in the Des Moines Lobe subecoregion, (2) presence of a majority of the expected fish taxa (7 of 11) for streams in this subregion despite notes on field sheet that sampling (seining) was hindered by deep water and snags, and (3) presence of approximately average quality of the aquatic habitats. The primary impact to the physical characteristics of the stream was frequent areas of streambank erosion.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the September 1994 DNR stream use assessment in Webster County. The results of the September 1994 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

LIZARD CR

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 04-UDM-0315

Subsegment No.: 0

Subsegment Description: DD 164 (NW 1/4, S31, T91N, R31W, Pocahontas Co.) to headwaters

Subsegment Length: 22 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of a fish kill in November 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The general aquatic life uses were assessed as "partially supported." EXPLANATION: A fish kill occurred on this reach of Lizard Creek at Pocahontas on November 8, 1999. The kill was attributed to pumping of a water/ammonia solution from a tank to a storm sewer and onto Lizard Creek. An estimated 57,701 fish were killed. (An previous kill on this reach occurred approximately three miles southeast of Pocahontas on September 30, 1991; no cause of the kill was determined.) According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the general aquatic life uses of this stream were assessed as "partially supported" due to the November 1999 kill.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

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Upper Des Moines River Subbasin

LIZARD CR, S BR

-- mouth-Webster to headwaters

Waterbody ID No.: IA 04-UDM-0320

Subsegment No.: 1

Subsegment Description: mo->DD 125,S12,T89N,R31W Pocahontas Co.

Subsegment Length: 39 miles

ASSESSMENT COMMENTS: Assessment is based on results of a September 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (26) well above the overall median score (22) for DNR stream assessments, (2) indications on field sheet of very diverse substrate, several pool/riffle sequences, only isolated channel alterations, and relatively stable stream banks, (3) fish score (12) better than 75th percentile score (10), and (4) fish community of 13 species from three families.

For the 1998 report, used a review of the field sheet from the September 1994 DNR stream use assessment, and a review of the field notes from the April 1992 DNR fish survey, to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of moderately diverse fish communities (species/families: 13/3 (1994); 14/5 (1992)) for streams in the Des Moines Lobe subcoregion, (2) presence of a majority of the expected fish taxa (7 of 11) at both sample locations, (3) presence of environmentally sensitive species, including northern hogsucker, smallmouth bass, and banded darter, and (4) indications of above average quality of aquatic habitats with no significant impacts to the physical characteristics of the stream noted.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the September 1994 DNR stream use assessment in Pocahontas County. The results of the September 1994 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

SPRING CR

-- mouth-Webster to headwaters

Waterbody ID No.: IA 04-UDM-0323

Subsegment No.: 0

Subsegment Description: mo to Prairie Cr S14,T88N,R30W WebsterCo

Subsegment Length: 4.9 miles

ASSESSMENT COMMENTS: Assessment is based on results of a September 1994 stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report. Stream not designated for Class B(LR) aquatic life uses until June 1995.

For 1996 report, used results of the September 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (27) much better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of very diverse substrates, numerous pool/riffle sequences, no channel alterations, and relatively stable stream banks, (3) fish score (13) much better than the 75th percentile score (10) for stream assessments made with seines, (4) presence of a diverse fish community (11 species) including smallmouth bass despite difficulty in seining rocky areas. Field sheet does not suggest any threats to the continued support of the aquatic life uses.

For the 1998 report, used a review of the field sheet from the September 1994 DNR stream use assessment to continue to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (11 species from 3 families) for streams in the Des Moines Lobe subcoregion, (2) presence of a majority of the expected fish taxa (6 of 11) for streams in this subregion, and (3) indication of exceptional habitat quality (see assessment developed for the 1996 report above). Due to the high quality aquatic habitats in this stream, and due to the difficulty noted in seining due to rocky substrates, suspect that additional monitoring would show additional fish taxa present and support of the Class B(LR) uses to be fully supported (not threatened).

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1996 and 1998 reports (see above) that was based on the September 1994 DNR stream use assessment in Webster County. The results of the September 1994 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

LIZARD CR, N BR

-- mouth-Pocahontas to headwaters

Waterbody ID No.: IA 04-UDM-0327

Subsegment No.: 0

Subsegment Description: mo to DD 169 S6,T91N,R31W Pocahontas Co

Subsegment Length: 9.9 miles

ASSESSMENT COMMENTS: Assessment is based on results of a September 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1994 stream use assessment to assess support of the Class B(LR) aquatic life uses as PS due to (1) habitat score (21) poorer than the overall habitat score (22) for DNR stream use assessments, (2) indication on field sheet of extensive channel alterations (stream channelization), (3) comments on field sheet regarding "many areas too shallow for aquatic habitat."

For the 1998 report, used a review of the field sheet from the September 1994 DNR stream use assessment in Pocahontas County to continue to assess support of the Class B(LR) aquatic life uses as PS due to (1) presence of a relatively depauperate fish community (7 species from 2 families) for streams in the Des Moines Lobe subcoregion, (2) presence of less than a majority of the expected fish taxa (4 of 11) for streams in this subregion, and (3) indications on the field sheet of extensive channel alterations due to channelization and generally poor quality aquatic habitats. Follow-up monitoring is needed to determine the status of the aquatic communities and habitats of this stream and to determine the degree to which the Class B(LR) uses may be impaired.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1996 and 1998 reports (see above). The results of the September 1994 DNR stream use assessment in Pocahontas County-upon which the previous assessment of the Class B(LR) uses was based ("partially supported")-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

BADGER CR

-- mouth to headwaters

Waterbody ID No.: IA 04-UDM-0330

Subsegment No.: 0

Subsegment Description: mouth to Badger Lake Dam, Webster Co.

Subsegment Length: 1.2 miles

ASSESSMENT COMMENTS: Assessment is based on results of a November 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of November 1994 DNR stream use assessment to assess support of Class B(LR) aquatic life uses as FST due to (1) habitat score (23) better than the overall median score (22) for DNR stream use assessments and (2) fish score (11) better than 75th percentile for stream assessments made by seining.

For the 1998 report, used a review of the field sheet from the 1994 DNR stream use assessment in Webster County to downgrade the assessment of support of the Class B(LR) aquatic life uses from FST to PS due to (1) relatively low fish community diversity (5 species from 3 families) for streams in the Des Moines Lobe subcoregion and (2) presence of only 3 of the 11 expected fish taxa for streams in this subregion. The relatively poor results for sampling of the aquatic community is likely due to the abundance of rocky substrates and snags in this stream. Nonetheless, the low diversity and lack of environmentally sensitive species suggests that follow-up monitoring is needed to better determine the status of the aquatic communities and to determine the degree to which the Class B(LR) uses may be impaired. Field sheet indicates no significant impacts to the physical characteristics of this stream.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1998 report (see above). The results of the November 1994 DNR stream use assessment in Webster County-upon which the previous assessment of the Class B(LR) uses was based ("partially supported")-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), habitat conditions (rocks and snags) limited sampling effectiveness for fish, and follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

DEER CR

-- mouth-Webster to headwaters

Waterbody ID No.: IA 04-UDM-0335

Subsegment No.: 0

Subsegment Description: mouth to trib S16,T90N,R29W Webster Co

Subsegment Length: 4 miles

ASSESSMENT COMMENTS: Assessment is based on results of a November 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report. Stream not designated for Class B(LR) aquatic life uses until June 1995.

For 1996 report, used results of the November 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (22) equal to the overall median score for DNR stream use assessments, (2) indications on field sheet of diverse substrates, several pool/riffle sequences, only isolated channel alterations, and relatively stable stream banks, and (3) fish score (11) better than the 75th percentile score (10) for stream assessments made with seines despite notes on field sheet indicating difficult seining conditions due to "numerous snags and large boulders." Field sheet suggests that continued support of the Class B(LR) aquatic life uses is threatened by pasturing of the riparian corridor.

For the 1998 report, used a review of the field sheet from the 1994 DNR stream use assessment in Webster County to downgrade the assessment of support of the Class B(LR) aquatic life uses from FST to PS due to (1) relatively low fish community diversity (5 species from 3 families) for streams in the Des Moines Lobe subcoregion and (2) presence of less than a majority of the expected fish taxa (5 of 11) for streams in this subregion. As with the DNR stream use assessments for other streams in this portion of the upper Des Moines basin, rocky substrates and numerous snags hindered effective sampling (seining) of the fish community. Follow-up monitoring is needed to better define the status of the aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired. The field sheet indicates above average habitat quality, with no significant threats to the physical characteristics of this stream.

For the 2000 report: **SUMMARY:** The Class B(LR) aquatic life uses remain assessed as "partially supported." **EXPLANATION:** Continue to use the assessment of support of the Class B(LR) uses developed for the 1998 report (see above). The results of the November 1994 DNR stream use assessment in Webster County-upon which the previous assessment of the Class B(LR) uses was based ("partially supported")-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), habitat conditions (rocks and snags) limited sampling effectiveness for fish, and follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

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Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

BEAVER CR

-- mouth to headwaters

Waterbody ID No.: IA 04-UDM-0340

Subsegment No.: 0

Subsegment Description: mouth to trib S28,T91N,R28W Humboldt Co.

Subsegment Length: 5.7 miles

ASSESSMENT COMMENTS: Assessment is based on results of a September 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of September 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (25) better than the overall median score (22) for DNR stream use assessments and (2) fish score (11) better than the 75th percentile for stream use assessments made with seines.

For the 1998 report, used a review of the field sheet from the September 1994 DNR stream use assessment in Humboldt County to downgrade the assessment of support of the Class B(LR) aquatic life uses from FST to PS due to (1) very low fish community diversity (4 species from 2 families) for streams in the Des Moines Lobe subcoregion and (2) presence of less than a majority of the expected fish taxa (2 of 11) for streams in this subregion. Although the sampling of the fish community was negatively affected by large rocks and other debris in the stream, the low diversity suggests that follow-up monitoring should be conducted to better determine the status of the aquatic communities and habitats and to determine whether the Class B(LR) aquatic life uses are impaired. The field sheet does not indicate any significant impacts to the physical characteristics of this stream.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1998 report (see above). The results of the September 1994 DNR stream use assessment in Humboldt County-upon which the previous assessment of the Class B(LR) uses was based ("partially supported")-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), habitat conditions (rocks and snags) limited sampling effectiveness for fish, and follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

INDIAN CR

-- mouth-Humboldt to headwaters

Waterbody ID No.: IA 04-UDM-0350

Subsegment No.: 0

Subsegment Description: mo to DD 20 S21,T91N,R29W Humboldt Co.

Subsegment Length: 4.8 miles

ASSESSMENT COMMENTS: Assessment is based on results of a September 1994 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the September 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (25) much better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of very diverse substrates, numerous pool/riffle sequences, only isolated channel alterations, and relatively stable stream banks. Relatively few fish species collected (3), but seining effectiveness was hindered by rocks and snags.

For the 1998 report, used a review of the field sheet from the September 1994 DNR stream use assessment in Humboldt County to downgrade the assessment of support of the Class B(LR) aquatic life uses from FST to PS due to (1) very low fish community diversity (3 species from 3 families) for streams in the Des Moines Lobe subcoregion (47b) and (2) presence of very few of the expected fish taxa (2 of 11) for streams in this subregion. Although results of fish sampling were negatively influenced by the difficulty of seining in several rocky and snag-filled pools, the results suggest a potential water quality problem, especially considering the relatively high quality aquatic habitats present at the assessment site (see above assessment developed for the 1996 report). Follow-up monitoring is needed to better determine the status of the aquatic communities and to determine the degree to which the Class B(LR) uses may be impaired.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1998 report (see above). The results of the September 1994 DNR stream use assessment in Humboldt County-upon which the previous assessment of the Class B(LR) uses was based ("partially supported")-are approximately 5 years old and thus can be used to assess current water quality conditions. As stated in the assessment developed for the 1998 report (see above), habitat conditions (rocks and snags) limited sampling effectiveness for fish, and follow-up monitoring is needed in this stream reach to determine the status of aquatic communities and habitats and to determine the degree to which the Class B(LR) uses may be impaired.

PRAIRIE CR

-- mouth-Pocahontas to headwaters

Waterbody ID No.: IA 04-UDM-0375

Subsegment No.: 0

Subsegment Description: mo to trib S13,T94N,R31W Palo Alto Co.

Subsegment Length: 5.7 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of a fish kill in August 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Insufficient information; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "partially supported." EXPLANATION: A fish kill occurred in this stream reach near West Bend in Palo Alto County on August 18, 1998. The kill was attributed to discharge of liquid manure from an open hog lot after rainfall had caused a catch basin to overflow. An estimated 11,000 fish were killed. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the Class B(LR) aquatic life uses of this stream were assessed as "partially supported."

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Rivers and Streams: Des Moines River Basin

Upper Des Moines River Subbasin

OLD CHANNEL DES MOINES R

-- mouth-Palo Alto to headwaters

Waterbody ID No.: IA 04-UDM-0383

Subsegment No.: 0

Subsegment Description: mo (S26,T95N,R32W, Palo Alto Co.) -->DD41 S29,T95N,R32W

Subsegment Length: 5.8 miles

ASSESSMENT COMMENTS: Assessment is based on results of an October 1995 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report. Stream not designated for aquatic life uses until June 1996.

For 1996 report, used results of the October 1995 DNR stream use assessment to assess support of the Class B(WW) aquatic life uses as FST due to (1) habitat score (26) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheet of very diverse substrates, deep pools, only isolated channel alterations, and relatively stable banks, (3) fish score (12) equal to the 75th percentile for stream assessments made with electrofishers, (4) evidence of fishing activity in this reach, including two fishermen that reported taking "nice northerns" from pools in this area. Field sheet does not suggest any threats to the continued support of the aquatic life uses.

For the 1998 report, used a review of the field sheet from the October 1995 DNR stream use assessment to continue to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of the expected game fish species (especially northern pike) and (2) good evidence that stream supports a fishery. Most of this reach was too deep to sample; thus, evaluation of the aquatic communities is partial, at best. Additional monitoring is needed to better define the aquatic communities of this stream.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1996 and 1998 reports (see above) that was based on the October 1995 DNR stream use assessment in Palo Alto County. The results of the October 1995 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

BROWN CR

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 04-UDM-0400

Subsegment No.: 0

Subsegment Description: mouth (NW 1/4, S24, T99N, R34W, Emmet Co.) to IA/MN state line.

Subsegment Length: 8 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of a fish kill in September 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

"General Use" waterbody. No information available; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The general aquatic life uses of this stream were assessed as "partially supported." EXPLANATION: A fish kill occurred in this stream reach on Sept. 27, 1998, near Estherville in Emmet County. A rainfall event moved from 90,000 to 100,000 gallons of manure to Brown Creek and onto the Des Moines River just downstream from Estherville. Approximately 1 mile of Brown Creek was affected, and approximately 20 miles of the Des Moines River was affected. An estimated 75,300 fish were killed. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the general aquatic life uses of this stream were assessed as "partially supported."

Chariton River Subbasin

CHARITON R

-- IA/MO line to Rathbun Dam

Waterbody ID No.: IA 05-CHA-0010

Subsegment No.: 2

Subsegment Description: Cooper Cr (=Hwy 2, Appanoose Co.) to Rathbun Dam

Subsegment Length: 35 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR monthly water quality monitoring N of Centerville and (2) fish tissue (RAFT) monitoring in 1996 RAFT. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Drinking Water Supply	-- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, WQ monitoring data showed no violations of Class B or C WQC for the second consecutive 305(b) cycle; thus assessed as FS (NPS impact downgraded overall assessment of aquatic life uses to PS. (All fish contams < 1/2 FDA levels.)

For 1994 report, once again had no violations of WQC. Nearly the entire reach has been channelized, and primary impacts to support of aquatic life use is from habitat alterations due to channelization. Monitoring of hatchery outlet between Feb and September 1992 showed no violations of Class B WQC (except 1 of 6 samples with levels of Hg > WQC). Pesticides (herbicides) present, but a relatively low levels. All of the 24 samples had NO3 < 5 mg/l.

For 1996 report, only violation in the most recent three years of monthly fixed station monitoring was 1 viol of the Class C WQC for pH in 35 samples (=3% violation= full support). Thus, for the 1996 report, use the assessments of support of the Class B(WW) and Class C uses developed for the 1994 report (Class B(WW,aquatic life)=PS; Class C (drinking water)=FS. 1996 RAFT showed v. low leves of contams in CCAT and W.crappie; fish consumption uses = FS.

For the 1998 report, continue to assess support of the Class B(WW) uses as PS due to impacts of habitat alterations due to channelization. Results of WQ monitoring at the DNR WQ station N of Centerville, however, show no violations of Class B(WW) WQ criteria for either conventional or toxic pollutants in monthly sampling conducted over the October 95->September 95 assessment. The Class C drinking water uses of this reach were assessed as FST due to levels of atrazine in 3 of the 24 samples collected over the two-year period that exceeded the atrazine MCL. These samples were collected from July through Septemeber 1996 and ranged from 3.1 to 4.3 ug/l*. See framework for determining degree of drinking water use support on page 3-44 of the supplement to the 1998 U.S. EPA guidelines for Section 305(b) reporting for details on assessment methods. Fish consumption uses were assessed as FS due to levels of all contaminants less than 1/2 FDA action levels in samples of fillets from channel catfish and white crappie collected from this reach for the 1996 RAFT program. *Summary statistics for atrazine: 24 samples analyzed; mean= 2.1 ug/l; median=2.0 ug/l; 13% (3 of 24 samples) exceeded the MCL of 3.0 ug/l; range of 0.18 to 4.3 ug/l. No violations of the nitrate MCL (10 mg/l as N) in the 36 samples over 3 years. Follow-up monitoring is needed to determine the status of aquatic communities and habitats of this river.

For the 2000 report: SUMMARY: Class B(WW) aquatic life uses were assessed as "fully supporting / threatened," and Class C (drinking water) uses were assessed as "fully supporting / threatened." Fish consumption uses were assessed as "fully supporting." EXPLANATION: Class B(WW) aquatic life uses were assessed as "fully supporting" due to the lack of violations of water quality criteria (1) in the 24 samples analyzed for conventional and toxic parameters (dissolved oxygen, pH, and ammonia-nitrogen) and (2) in the two samples analyzed for toxic metals, at the DNR monthly monitoring station on the Chariton River downstream from Rathbun Dam during the 1998-1999 biennial period. Class C (drinking water) uses were assessed as "fully supporting / threatened" due to the relatively low average level of atrazine (0.9 ug/l) and due to the single violation (1) of the U.S. EPA MCL for atrazine. The only one of the 23 samples that contained atrazine above the 3.0 ug/l MCL (4.80 ug/l) was collected on May 26, 1998; the sample with the next highest concentration contained 1.6 ug/l of atrazine. The average level of atrazine in the 23 samples was 0.9 mg/l (standard deviation = 9.0 mg/l) (median = 0.6 ug/l). None of the 24 samples analyzed for nitrate exceeded the EPA MCL of 10 mg/l; no other Class C water quality criteria were exceeded. Based on DNR's Section 305(b) assessment methodology, the results of monitoring suggest that the drinking water uses are fully supported / threatened. Fish consumption uses remain assessed as "fully supporting" based on results from EPA/DNR fish tissue (RAFT) monitoring in 1996 that showed levels of organochlorine contaminants and toxic metals in composite samples of fillets from channel catfish and white crappie were below 1/2 of the respective FDA action levels and DNR levels of concern.

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Rivers and Streams: Southern Iowa River Basins

Chariton River Subbasin

CHARITON R

-- up. end Rathbun to headwaters

Waterbody ID No.: IA 05-CHA-0030

Subsegment No.: 1

Subsegment Description: up. end Rathbun to Hwy 14, Lucas Co.

Subsegment Length: 42 miles

ASSESSMENT COMMENTS: Waterbody segment not assessed for the 2000 305(b) cycle.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, reach was not assessed with WQ monitoring data; reach was assessed as PS due to agricultural NPS impacts by BPJ.

For 1994 report, used information in Paragamian (1987) that showed meandered portions of this reach had good habitat and supported larger standing stocks of fish than channelized reaches. Presence of channelized reaches threatens support of aquatic life uses.

For 1996 report, used results of previous assessment for 1994 report and results of October 1994 DNR stream use assessment S of Russell. Results of stream assessment show slightly above average habitat quality with relatively little disturbance of the riparian zone and no channel alterations. Results of fish collection are inconclusive: relatively few species and numbers per species seen but a several factors could combine to produce low numbers; e.g., time of year, problem with low DO in this heavily shaded reach, etc. Based on previous assessments and on October 1994 DNR assessment, assess support of the Class B(LR) aquatic life uses as FST.

For the 1998 report, continue to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST). In addition, used results from the Army Corps of Engineers WQ monitoring station S of Chariton which show no violations of Class B(LR) WQ criteria for DO, pH, or ammonia in two samples in April and May, 1997. Although this reach is not designated for Class C drinking water uses, the river does flow into Rathbun Reservoir which is designated for Class C uses. Results of ACOE pesticide monitoring show that 5 of 10 samples collected between April and September 1997 contained levels of atrazine that exceeded the 3 ug/l MCL (mean=6.25 ug/l; median=2.78 ug/l; range: 1.46 to 25.0 ug/l). None of the 9 samples analyzed for alachlor contained levels that exceeded the 1.0 ug/l MCL. Summary of 1997 monitoring is available.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "partially supported." EXPLANATION: The assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted on the Chariton River downstream from Chariton (station RA-15) by the U.S. Army Corps of Engineers-Kansas City District (1998) and by Iowa State University/Limnology under contract with the U.S. Army Corps of Engineers (1999) as part of the Rathbun Water Quality Project. The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). Results of this monitoring show no violations of Iowa Class B(LR) water quality criteria for pH in the 10 samples analyzed in 1999 or for ammonia-nitrogen in the 23 samples analyzed during 1998 and 1999. Although these results suggest "full support" of the Class B(LR) uses, two violations of the Class B(LR) criterion for dissolved oxygen (5 mg/l) in the nine samples (22%) analyzed in 1999 suggest a potential impairment of these uses. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), "partial support" of beneficial uses is indicated if criteria are exceeded in from 11% to 25% of the samples for conventional parameters (pH, temperature, and dissolved oxygen). Violations of the criterion for dissolved oxygen occurred in the samples collected on June 11, 1999 (4.7 mg/l) and on August 18, 1999 (4.6 mg/l). Both samples were collected relatively early in the morning (from 7:30 to 8:30 AM); however, these early collection times likely were not the primary factor in the low levels of dissolved oxygen. Additional monitoring is needed to better define this potential impairment of the aquatic life uses. This additional monitoring is being conducted in 2000 as part of the ongoing Rathbun Water Quality Project. Monitoring conducted during 1998 and 1999 showed high levels of both nutrient parameters (total nitrogen and total phosphorus) and pesticides at station RA-15 and at stations on other reservoir tributaries, with the highest levels often associated with storm runoff. The Iowa Water Quality Standards does not currently have aquatic life criteria for these nutrient parameters or for other nonpoint source-related parameters (for example, total suspended solids). Although this river reach is not designated for Class C drinking water uses, the river does flow into Rathbun Reservoir which is designated for Class C uses. The seasonal elevation of pesticides levels in the tributaries of the Rathbun watershed presents a continuing threat to full support of the Class C (drinking water) uses designated for Rathbun Reservoir. For example, of the 22 samples collected at Station RA-15 in 1998 and 1999, the seven samples that exceeded the atrazine MCL of 3.0 ug/l were collected from late May to mid-July following application of herbicides to farm fields and during months with typically high levels of rainfall. The mean levels of atrazine at Station RA-15 were 6.64 ug/l in 1998 (N=12; maximum of 39.70 ug/l) and 5.76 ug/l in 1999 (N=10; maximum of 25.2 ug/l).

Rivers and Streams: Southern Iowa River Basins

*Chariton River Subbasin***CHARITON R**

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 05-CHA-00301

Subsegment No.: 0

Subsegment Description: Chariton Creek (S19, T71N, R23W, Lucas Co.) to headwaters

Subsegment Length: 10 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted in 1998 and 1999 as part of the Rathbun Lake Water Quality Project. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports.

For the 2000 report: **SUMMARY:** The general aquatic life uses were assessed as "partially supported." **EXPLANATION:** The assessment of support of the general uses is based on results of water quality monitoring conducted on the Chariton River near its confluence with Chariton Creek in western Lucas County (station RA-32) by the U.S. Geological Survey (1998) and by Iowa State University/Limnology (1999) under contract with the U.S. Army Corps of Engineers as part of the Rathbun Water Quality Project. The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). Results of this monitoring show no violations of Iowa Class B(LR) water quality criteria for pH in the 10 samples analyzed in 1999 or for ammonia-nitrogen in the 20 samples analyzed during 1998 and 1999. Although these results suggest "full support" of the general aquatic life uses, the three violations of the Class B(LR) criterion for dissolved oxygen (5 mg/l) in the nine samples (33%) analyzed in 1999 suggests a potential impairment to the full support of these uses. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), "full support" of beneficial uses is indicated if criteria are exceeded in from 10% or less of the samples analyzed for conventional parameters (pH, temperature, and dissolved oxygen); if more than 10% of samples exceed the criterion, the aquatic life uses are "impaired." Due to the lack of sufficient data points for dissolved oxygen during the biennial period for developing a "monitored" assessment (according to DNR's 305(b) assessment methodology, at least 10 samples of conventional parameters are needed), the general aquatic life uses were "evaluated" as "fully supported / threatened." The violations of the criterion for dissolved oxygen occurred in the following samples collected in 1999: June 11 (4.9 mg/l), August 18 (4.5 mg/l), and October 13 (3.3 mg/l); these samples were collected at during mid-morning hours (9:15 to 10:25 AM). Additional monitoring is needed to better define levels of dissolved oxygen in this stream reach. This additional monitoring is being conducted in 2000 as part of the ongoing Rathbun Water Quality Project. Monitoring conducted during 1998 and 1999 showed high levels of both nutrient parameters (total nitrogen and total phosphorus) and pesticides at station RA-33 and at stations on other reservoir tributaries, with the highest levels often associated with storm runoff. The Iowa Water Quality Standards does not currently have aquatic life criteria for these nutrient parameters or for other nonpoint source-related parameters (for example, total suspended solids). Although this stream reach is not designated for Class C drinking water uses, the Chariton River does flow into Rathbun Reservoir which is designated for Class C uses. The seasonal elevation of pesticides levels in the tributaries of the Rathbun watershed presents a continuing threat to full support of the Class C (drinking water) uses designated for Rathbun Reservoir. For example, of the 21 samples collected at Station RA-32 in 1998 and 1999, the six samples that exceeded the atrazine MCL of 3.0 ug/l were collected from mid-May to early July following application of herbicides to farm fields and during months with typically high levels of rainfall. The mean levels of atrazine at Station RA-32 were 6.97 ug/l in 1998 (N=11; maximum of 46.40 ug/l) and 9.49 ug/l in 1999 (N=10; maximum of 56.2 ug/l).

Rivers and Streams: Southern Iowa River Basins

Chariton River Subbasin**CHARITON CR**

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 05-CHA-00302

Subsegment No.: 0

Subsegment Description: mouth (S19, T71N, R23W, Lucas Co.) to headwaters

Subsegment Length: 14 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted in 1998 and 1999 as part of the Rathbun Lake Water Quality project. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports.

For the 2000 report: **SUMMARY:** The general aquatic life uses were assessed as "fully supported / threatened." **EXPLANATION:** The assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted on the Chariton Creek near its confluence with the Chariton River in western Lucas County (station RA-33) by the U.S. Geological Survey (1998) and by Iowa State University/Limnology (1999) under contract with the U.S. Army Corps of Engineers as part of the Rathbun Water Quality Project. The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). Results of this monitoring show no violations of Iowa Class B(LR) water quality criteria for pH in the 10 samples analyzed in 1999 or for ammonia-nitrogen in the 20 samples analyzed during 1998 and 1999. Although these results suggest "full support" of the general aquatic life uses, the one violation of the Class B(LR) criterion for dissolved oxygen (5 mg/l) in the nine samples (11%) analyzed in 1999 suggests a threat to the full support of these uses. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), "full support" of beneficial uses is indicated if criteria are exceeded in from 10% or less of the samples analyzed for conventional parameters (pH, temperature, and dissolved oxygen); if more than 10% of samples exceed the criterion, the aquatic life uses are "impaired." Due to the lack of sufficient data points for dissolved oxygen during the biennial period for developing a "monitored" assessment (according to DNR's 305(b) assessment methodology, at least 10 samples of conventional parameters are needed), the general aquatic life uses were "evaluated" as "fully supported / threatened." The violation of the criterion for dissolved oxygen occurred in the sample collected on October 13, 1999 (4.6 mg/l); this sample was collected at 10:40 AM. Additional monitoring is needed to better define levels of dissolved oxygen in this stream reach. This additional monitoring is being conducted in 2000 as part of the ongoing Rathbun Water Quality Project. Monitoring conducted during 1998 and 1999 showed high levels of both nutrient parameters (total nitrogen and total phosphorus) and pesticides at station RA-33 and at stations on other reservoir tributaries, with the highest levels often associated with storm runoff. The Iowa Water Quality Standards does not currently have aquatic life criteria for these nutrient parameters or for other nonpoint source-related parameters (for example, total suspended solids). Although this stream reach is not designated for Class C drinking water uses, the Chariton Creek does flow to Rathbun Reservoir which is designated for Class C uses. The seasonal elevation of pesticides levels in the tributaries of the Rathbun watershed presents a continuing threat to full support of the Class C (drinking water) uses designated for Rathbun Reservoir. For example, of the 21 samples collected at Station RA-33 in 1998 and 1999, the five samples that exceeded the atrazine MCL of 3.0 ug/l were collected from late May to early July following application of herbicides to farm fields and during months with typically high levels of rainfall. The mean levels of atrazine at Station RA-33 were 10.64 ug/l in 1998 (N=11; maximum of 93.60 ug/l) and 8.79 ug/l in 1999 (N=10; maximum of 63.4 ug/l).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Southern Iowa River Basins

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Chariton River Subbasin

CHARITON R, S FK

-- mouth to headwaters

Waterbody ID No.: IA 05-CHA-0060

Subsegment No.: 1

Subsegment Description: mo to Ninemile Cr nr Corydon, Wayne Co.

Subsegment Length: 40 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted in 1998 and 1999 as part of the Rathbun Lake Water Quality Project. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully

Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, no violations of Class B WQC from few samples from ACOE monitoring; thus, assessed as FS; DNR staff used BPJ to assess uses as PS.

For 1994 report, had one additional sample by ACOE that showed no violations of WQC. Map, however, shows channelization through the entire subsegment; thus assess as PS due to habitat alteration from channelization.

For 1996 report, had no new data from US ACOE. Thus, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, changed the assessment of support of Class B(LR) uses from PS to "not assessed": no biological information available. Monitoring is needed to determine the status of aquatic communities and habitats. Monitoring conducted by the U.S. Army Corps of Engineers from April through September 1997 show no violations of Class B(LR) WQ criteria for DO (2 samples), pH (2 samples), or ammonia (10 samples). This monitoring showed that 3 of 10 samples had levels of atrazine that exceeded the MCL of 3 ug/l, with two of the three samples collected in June 1997. The average level of atrazine in the 10 samples was 5.8 ug/l; the median was 1.05 ug/l; levels of atrazine ranged from 0.12 to 30.2 ug/l. All levels of alachlor were below the MCL of 2.0 ug/l. Levels of cyanazine ranged from 0.04 to 8.3 ug/l, with an average of 1.56 ug/l. Although the S.Fk. Chariton River is not designated for Class C drinking water uses, the river is tributary to Rathbun Lake, a Class C waterbody. A summary of the 1997 ACOE sampling is available.

For the 2000 report: **SUMMARY:** The Class B(LR) aquatic life uses were assessed as "fully supported." **EXPLANATION:** The assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted on the South Fork Chariton River near Promise City (station RA-12) by the U.S. Army Corps of Engineers-Kansas City District (1998) and by Iowa State University / Limnology under contract with the U.S. Army Corps of Engineers (1999) as part of the Rathbun Water Quality Project. The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). Results of this monitoring show no violations of Iowa Class B(LR) water quality criteria for dissolved oxygen in the 9 samples analyzed in 1999, for pH in the 10 samples analyzed in 1999, or for ammonia-nitrogen in the 23 samples analyzed during 1998 and 1999. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), these results suggest "full support" of the Class B(LR) uses. Additional monitoring is needed to better define the water quality conditions in this stream reach. This additional monitoring is being conducted in 2000 as part of the ongoing Rathbun Water Quality Project. Monitoring conducted during 1998 and 1999 showed high levels of both nutrient parameters (total nitrogen and total phosphorus) and pesticides at station RA-12 and at stations on other reservoir tributaries, with the highest levels often associated with storm runoff. The Iowa Water Quality Standards does not currently have aquatic life criteria for these nutrient parameters or for other nonpoint source-related parameters (for example, total suspended solids). Although this stream reach is not designated for Class C drinking water uses, the South Fork Chariton River does flow into Rathbun Reservoir which is designated for Class C uses. The seasonal elevation of pesticides levels in the tributaries of the Rathbun watershed presents a continuing threat to full support of the Class C (drinking water) uses designated for Rathbun Reservoir. For example, of the 23 samples collected at Station RA-12 in 1998 and 1999, the four samples that exceeded the atrazine MCL of 3.0 ug/l were collected in late May or June following application of herbicides to farm fields and during months with typically high levels of rainfall. The mean levels of atrazine at Station RA-12 were 5.72 ug/l in 1998 (N=13; maximum of 48.70 ug/l) and 4.19 ug/l in 1999 (N=10; maximum of 25.7 ug/l).

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Southern Iowa River Basins

Chariton River Subbasin

CHARITON R, S FK

-- mouth to headwaters

Waterbody ID No.: IA 05-CHA-0060

Subsegment No.: 2

Subsegment Description: Ninemile Cr. to outflow of Bob White L.

Subsegment Length: 40 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted in 1998 and 1999 as part of the Rathbun Lake Water Quality Project. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, reach was not assessed.

For 1994 report, used habitat assessment from stream use assessment to assess as FST; i.e., habitat score of 25 is relatively high for B(LR) sites. Staff report numerous pool/riffle sequences and some diversity of substrates.

For 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (FST).

For the 1998 report, continued to use assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST). Although this river is not designated for Class C drinking water uses, this river is tributary to Rathbun Reservoir, a Class C waterbody. Monitoring conducted in 1997 by the U.S. Army Corps of Engineers near Cambria showed that 7 of 10 samples had level of atrazine that exceeded the MCL of 3.0 ug/l. The average level of atrazine was 14.3 ug/l; median was 12.0 ug/l, with a range of 0.4 to 44.2 ug/l. The violations of the atrazine occurred from June 10 through August 20; the four June samples that violated the MCL all had levels of atrazine greater than 16.0 ug/l. Levels of alachlor were all less than the MCL of 2.0 ug/l. Forty percent of the 9 samples exceeded the MCLG for cyanazine of 1.0 ug/l. Levels of cyanazine ranged from 0.1 to 15.4 ug/l. Because the stream use assessment upon which the assessment of support of the Class B(LR) aquatic life uses is based is more than 5 years old, the assessment category was downgraded from "monitored" to "evaluated" as per U.S. EPA's Section 305(b) guidelines.

For the 2000 report: **SUMMARY:** The Class B(LR) aquatic life uses were assessed as "fully supported." **EXPLANATION:** The previous assessment of support of the Class B(LR) uses was based, in part, on results of a DNR stream use assessment conducted in 1991. The results of this assessment are now considered too old (greater than five years) for characterizing current water quality conditions. The current assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted on the South Fork Chariton River near Cambria (station RA-35) by the U.S. Geological Survey (1998) and by Iowa State University/Limnology (1999) under contract with the U.S. Army Corps of Engineers as part of the Rathbun Water Quality Project. The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). Results of this monitoring show no violations of Iowa Class B(LR) water quality criteria for dissolved oxygen in the 8 samples analyzed in 1999, for pH in the 9 samples analyzed in 1999, or for ammonia-nitrogen in the 19 samples analyzed during 1998 and 1999. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), these results suggest "full support" of the Class B(LR) uses. Additional monitoring is needed to better define the water quality conditions in this stream reach. This additional monitoring is being conducted in 2000 as part of the ongoing Rathbun Water Quality Project. Monitoring conducted during 1998 and 1999 showed high levels of both nutrient parameters (total nitrogen and total phosphorus) and pesticides at station RA-35 and at stations on other reservoir tributaries, with the highest levels often associated with storm runoff. The Iowa Water Quality Standards does not currently have aquatic life criteria for these nutrient parameters or for other nonpoint source-related parameters (for example, total suspended solids). Although this stream reach is not designated for Class C drinking water uses, the South Fork Chariton River does flow into Rathbun Reservoir which is designated for Class C uses. The seasonal elevation of pesticides levels in the tributaries of the Rathbun watershed presents a continuing threat to full support of the Class C (drinking water) uses designated for Rathbun Reservoir. For example, of the 19 samples collected at Station RA-35 in 1998 and 1999, the four samples that exceeded the atrazine MCL of 3.0 ug/l were collected in late May or June following application of herbicides to farm fields and during months with typically high levels of rainfall. The mean levels of atrazine at Station RA-35 were 5.23 ug/l in 1998 (N=10; maximum of 37.80 ug/l) and 6.02 ug/l in 1999 (N=9; maximum of 3=1 ug/l).

Rivers and Streams: Southern Iowa River Basins

Chariton River Subbasin

WALKER BRANCH

-- mouth (Wayne) to headwaters

Waterbody ID No.: IA 05-CHA-0061

Subsegment No.: 0

Subsegment Description: mouth to S Fk Walker Br, Wayne Co.

Subsegment Length: 1.5 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted in 1998 and 1999 as part of the Rathbun Lake Water Quality Project. See attached document for details..

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Insufficient information; not assessed for the 1994 or 1996 reports.

For the 1998 report, did not develop an assessment of support of the Class B(LR) aquatic life uses due to lack of information. Results of U.S. Army Corps of Engineers monitoring in 1997 near Confidence as part of a Rathbun Lake watershed study showed that none of the 5 samples collected between May and August 1997 exceeded the Class B(LR) WQ criteria for ammonia. These data, however, are not sufficient for developing an assessment of use support. Although not designated for Class C drinking water uses, the ACOE monitoring showed that 2 of 5 samples had levels of atrazine that exceeded the MCL of 3.0 ug/l. The average level of atrazine in the five samples was 4.12 ug/l; the median level was 2.21 ug/l, with a range of 1.47 to 8.75 ug/l. Similar to the other sites sampled as part of this study, levels of alaclor were all below the MCL of 2.0 ug/l, and levels of cyanazine exceeded the MCLG of 1.0 ug/l. Although not designated for drinking water uses, Walker Branch is tributary to Rathbun Lake which is designated for Class C drinking water uses. A summary of the ACOE monitoring in 1997 is available.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "fully supported." EXPLANATION: The assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted on Walker Branch near Confidence (station RA-38) by the U.S. Geological Survey (1998) and by Iowa State University/Limnology (1999) under contract with the U.S. Army Corps of Engineers as part of the Rathbun Water Quality Project. The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). Results of this monitoring show no violations of Iowa Class B(LR) water quality criteria for dissolved oxygen in the 6 samples analyzed in 1999, for pH in the 7 samples analyzed in 1999, or for ammonia-nitrogen in the 19 samples analyzed during 1998 and 1999. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), these results suggest "full support" of the Class B(LR) uses. Additional monitoring is needed to better define the water quality conditions in this stream reach. This additional monitoring is being conducted in 2000 as part of the ongoing Rathbun Water Quality Project. Monitoring conducted during 1998 and 1999 showed high levels of both nutrient parameters (total nitrogen and total phosphorus) and pesticides at station RA-38 and at stations on other reservoir tributaries, with the highest levels often associated with storm runoff. The Iowa Water Quality Standards does not currently have aquatic life criteria for these nutrient parameters or for other nonpoint source-related parameters (for example, total suspended solids). Although this stream reach is not designated for Class C drinking water uses, Walker Branch is a tributary of Rathbun Reservoir which is designated for Class C uses. The seasonal elevation of pesticides levels in the tributaries of the Rathbun watershed presents a continuing threat to full support of the Class C (drinking water) uses designated for Rathbun Reservoir. For example, of the 19 samples collected at Station RA-38 in 1998 and 1999, four of the five samples that exceeded the atrazine MCL of 3.0 ug/l were collected in late May or June following application of herbicides to farm fields and during months with typically high levels of rainfall. The mean levels of atrazine at Station RA-38 were 3.62 ug/l in 1998 (N=10; maximum of 20.40 ug/l) and 5.11 ug/l in 1999 (N=7; maximum of 27.4 ug/l).

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Rivers and Streams: Southern Iowa River Basins

Chariton River Subbasin

JORDAN CR

-- mouth (Wayne) to headwaters

Waterbody ID No.: IA 05-CHA-0062

Subsegment No.: 0

Subsegment Description: mouth to trib S26,T70N,R21W Wayne Co.

Subsegment Length: 3.5 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted in 1998 and 1999 as part of the Rathbun Lake Water Quality Project. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully

Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Insufficient information; not assessed for the 1994 or 1996 reports.

For the 1998 report, did not have sufficient information to develop an assessment of support of the Class B(LR) aquatic life uses. Although not designated for Class C drinking water uses, Jordan Creek is tributary to Rathbun Lake, a Class C waterbody. Information from sampling conducted by the U.S. Army Corps of Engineers from May through September 1997 as part of study of the Rathbun Lake watershed to assess levels of nutrients and pesticides showed 3 of 7 samples having levels of atrazine that exceed the MCL of 3.0 ug/l. The MCL was exceeded twice in June and once in August 1997. Average level of atrazine in the seven samples was 2.6 ug/l; median =2.17 ug/l; range of 0.84 to 4.22 ug/l. Levels of alachlor were all less than the MCL; levels of cyanazine were less than the MCLG of 1.0 ug/l. A summary of the 1997 ACOE sampling in the Rathbun Lake watershed is available.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "fully supported." EXPLANATION: The assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted on Jordan Creek near Bethlehem (station RA-37) by the U.S. Geological Survey (1998) and by Iowa State University/Limnology (1999) under contract with the U.S. Army Corps of Engineers as part of the Rathbun Water Quality Project. The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). Results of this monitoring show no violations of Iowa Class B(LR) water quality criteria for dissolved oxygen in the 9 samples analyzed in 1999, for pH in the 10 samples analyzed in 1999, or for ammonia-nitrogen in the 20 samples analyzed during 1998 and 1999. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), these results suggest "full support" of the Class B(LR) uses. Additional monitoring is needed to better define the water quality conditions in this stream reach. This additional monitoring is being conducted in 2000 as part of the ongoing Rathbun Water Quality Project. Monitoring conducted during 1998 and 1999 showed high levels of both nutrient parameters (total nitrogen and total phosphorus) and pesticides at station RA-37 and at stations on other reservoir tributaries, with the highest levels often associated with storm runoff. The Iowa Water Quality Standards does not currently have aquatic life criteria for these nutrient parameters or for other nonpoint source-related parameters (for example, total suspended solids). Although this stream reach is not designated for Class C drinking water uses, Jordan Creek is a tributary of Rathbun Reservoir which is designated for Class C uses. The seasonal elevation of pesticides levels in the tributaries of the Rathbun watershed presents a continuing threat to full support of the Class C (drinking water) uses designated for Rathbun Reservoir. For example, of the 19 samples collected at Station RA-37 in 1998 and 1999, the five samples that exceeded the atrazine MCL of 3.0 ug/l were collected from mid-May to early July following application of herbicides to farm fields and during months with typically high levels of rainfall. The mean levels of atrazine at Station RA-37 were 1.95 ug/l in 1998 (N=9; maximum of 7.70 ug/l) and 4.59 ug/l in 1999 (N=10; maximum of 30.1 ug/l).

Rivers and Streams: Southern Iowa River Basins

*Chariton River Subbasin***JACKSON CR**

-- mouth (Wayne) to headwaters

Waterbody ID No.: IA 05-CHA-0063

Subsegment No.: 0

Subsegment Description: mouth to trib S12,T68N,R21W Wayne Co.

Subsegment Length: 10 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted in 1998 and 1999 as part of the Rathbun Lake Water Quality Project. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Insufficient information; not assessed for the 1994 or 1996 reports.

For 1998 report, too few data were available from ACOE monitoring conducted in 1997 as part of a Rathbun L. watershed study to assess support of the Class B(LR) aquatic life uses. None of the 7 samples collected between May and September 1997 contained levels of ammonia that exceeded the Class B(LR) WQ criterion. However, this is relatively little information on which to base an assessment. Although Jackson Creek is not designated for Class C drinking water uses, this stream is tributary to Rathbun Lake, a Class C waterbody. ACOE sampling for agricultural pesticides from May to Sept. 1997 showed that 2 of 7 samples exceeded the MCL for atrazine; both samples were collected in June (3.88 and 16.7 ug/l). The average level of atrazine was 3.99 ug/l, median = 1.99 ug/l, and levels ranged from 0.51 to 16.7 ug/l. Levels of alachlor in all samples were less than the 2.0 ug/l MCL. Other pesticides were sampled for (e.g., metolachlor and cyanazine). Cyanazine concentrations in June were well above the MCLG of 1.0 ug/l; the Iowa Water Quality Standards (1994) do not contain a Class C criterion for cyanazine. A summary of the ACOE sampling in the Rathbun Lake watershed is available.

For the 2000 report: **SUMMARY:** The Class B(LR) aquatic life uses were assessed as "fully supported / threatened." **EXPLANATION:** The assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted on Jackson Creek near Bridgeport (station RA-39) by the U.S. Geological Survey (1998) and by Iowa State University/Limnology (1999) under contract with the U.S. Army Corps of Engineers as part of the Rathbun Water Quality Project. The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). Results of this monitoring show no violations of Iowa Class B(LR) water quality criteria for pH in the 10 samples analyzed in 1999 or for ammonia-nitrogen in the 21 samples analyzed during 1998 and 1999. Although these results suggest "full support" of the Class B(LR) uses, the one violation of the Class B(LR) criterion for dissolved oxygen (5 mg/l) in the nine samples (11%) analyzed in 1999 suggests a threat to the full support of these uses. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), "full support" of beneficial uses is indicated if criteria are exceeded in from 10% or less of the samples analyzed for conventional parameters (pH, temperature, and dissolved oxygen); if more than 10% of samples exceed the criterion, the aquatic life uses are "impaired." Due to the lack of sufficient data points for dissolved oxygen during the biennial period for developing a "monitored" assessment (according to DNR's 305(b) assessment methodology, at least 10 samples of conventional parameters are needed), the Class B(LR) uses were "evaluated" as "fully supported / threatened." The violation of the criterion for dissolved oxygen occurred in the sample collected on October 13, 1999 (2.9 mg/l); this sample was collected at 12:30 PM. The level of dissolved oxygen in this sample (2.9 mg/l) is unusually low for an Iowa surface water. Additional monitoring is needed to better define the water quality conditions in this stream reach. This additional monitoring is being conducted in 2000 as part of the ongoing Rathbun Water Quality Project. Monitoring conducted during 1998 and 1999 showed high levels of both nutrient parameters (total nitrogen and total phosphorus) and pesticides at station RA-39 and at stations on other reservoir tributaries, with the highest levels often associated with storm runoff. The Iowa Water Quality Standards does not currently have aquatic life criteria for these nutrient parameters or for other nonpoint source-related parameters (for example, total suspended solids). Although this stream reach is not designated for Class C drinking water uses, Jackson Creek is a tributary of Rathbun Reservoir which is designated for Class C uses. The seasonal elevation of pesticides levels in the tributaries of the Rathbun watershed presents a continuing threat to full support of the Class C (drinking water) uses designated for Rathbun Reservoir. For example, of the 21 samples collected at Station RA-39 in 1998 and 1999, the three samples that exceeded the atrazine MCL of 3.0 ug/l were collected in the month of June following application of herbicides to farm fields and during a month with typically high levels of rainfall. The mean levels of atrazine at Station RA-39 were 4.08 ug/l in 1998 (N=11; maximum of 37.5 ug/l) and 2.39 ug/l in 1999 (N=10; maximum of 17.6 ug/l).

Rivers and Streams: Southern Iowa River Basins

Chariton River Subbasin**NINEMILE CR**

-- mouth (Wayne) to headwaters

Waterbody ID No.: IA 05-CHA-0066

Subsegment No.: 0

Subsegment Description: mouth to trib S31,T70N,R22W Wayne Co.

Subsegment Length: 2.3 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted in 1998 and 1999 as part of the Rathbun Lake Water Quality Project. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully

Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the March 1991 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (25) much better than the overall median score (22) for stream use assessments, (2) fish score (10) equal to the 75th percentile score for stream assessments made with seines, and (3) field notes that indicate moderately diverse substrates, occurrence of pools/riffles, and only isolated channel alterations. Continued support of the Class B(LR) uses is threatened by agricultural NPS impacts, including channelization and pasturing of riparian zone.

For the 1998 report, continued to use assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST). Because the stream use assessment upon which this assessment was based was conducted in 1991, and is thus more than 5 years old, changed assessment category from "monitored" to "evaluated" as defined in U.S. EPA guidelines for Section 305(b) reporting. Also used results from a study of nutrients and pesticides in the watershed of Rathbun Lake conducted by the U.S. Army Corps of Engineers from May to September 1997. None of the 8 samples collected contained levels of ammonia greater than the Class B(LR) WQ criterion. Five of 9 samples contained atrazine at levels above the 3.0 ug/l MCL. Four of the five samples were collected in June and all four contained greater than 23.0 ug/l of atrazine. The average level of atrazine in the 9 samples was 17.56 ug/l; median = 3.34 ug/l, with a range of 0.67 to 48.9 ug/l. Levels of cyanazine and metolachlor, and well as levels of nitrogen and phosphorus, were also relatively high compared to other tributaries of Rathbun Lake sampled for this study. Levels of alachlor were less than the MCL of 2.0 ug/l in all samples. Despite levels of pesticides that exceed drinking water criteria, Ninemile Creek is not designated for drinking water uses, and criteria for impacts of pesticides do not exist. A summary of ACOE monitoring in 1997 is available. Additional biological monitoring is needed to update this assessment and to determine the status of the aquatic communities of this stream.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "fully supported." EXPLANATION: The previous assessment of support of the Class B(LR) uses was based, in part, on results of a DNR stream use assessment conducted in 1991. The results of this assessment are now considered too old (greater than five years) for characterizing current water quality conditions. The current assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted on Ninemile Creek (station RA-36) by the U.S. Geological Survey (1998) and by Iowa State University/Limnology (1999) under contract with the U.S. Army Corps of Engineers as part of the Rathbun Water Quality Project. The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). Results of this monitoring show no violations of Iowa Class B(LR) water quality criteria for dissolved oxygen in the 9 samples analyzed in 1999, for pH in the 10 samples analyzed in 1999, or for ammonia-nitrogen in the 20 samples analyzed during 1998 and 1999. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), these results suggest "full support" of the Class B(LR) uses. Additional monitoring is needed to better define the water quality conditions in this stream reach. This additional monitoring is being conducted in 2000 as part of the ongoing Rathbun Water Quality Project. Monitoring conducted during 1998 and 1999 showed high levels of both nutrient parameters (total nitrogen and total phosphorus) and pesticides at station RA-36 and at stations on other reservoir tributaries, with the highest levels often associated with storm runoff. The Iowa Water Quality Standards does not currently have aquatic life criteria for these nutrient parameters or for other nonpoint source-related parameters (for example, total suspended solids). Although this stream reach is not designated for Class C drinking water uses, Ninemile Creek is a tributary of Rathbun Reservoir which is designated for Class C uses. The seasonal elevation of pesticides levels in the tributaries of the Rathbun watershed presents a continuing threat to full support of the Class C (drinking water) uses designated for Rathbun Reservoir. For example, of the 20 samples collected at Station RA-36 in 1998 and 1999, the five samples that exceeded the atrazine MCL of 3.0 ug/l were collected from mid-May to late June following application of herbicides to farm fields and during months with typically high levels of rainfall. The mean levels of atrazine at Station RA-36 were 9.58 ug/l in 1998 (N=10; maximum of 82.80 ug/l) and 5.29 ug/l in 1999 (N=10; maximum of 27.7 ug/l).

Rivers and Streams: Southern Iowa River Basins

*Chariton River Subbasin***HONEY CR**

-- mouth-Lucas to headwaters

Waterbody ID No.: IA 05-CHA-0068

Subsegment No.: 0

Subsegment Description: mouth to trib S10,T71N,R20W Lucas

Subsegment Length: 4.2 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted in 1998 and 1999 as part of the Rathbun Lake Water Quality Project. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the two November 1990 DNR stream use assessments to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score at lower site (23) better than the overall median score (22) for DNR stream use assessments, (2) indications on field sheets for both assessments of diverse to very diverse substrates, several pool/riffle sequences, only isolated channel alterations, and relatively stable stream banks, and (3) comment on field sheet indicating "good habitat." Fish scores (10 and 9) were relatively low. Field sheets suggest that continued support of the Class B(LR) uses is threatened by channel straightening.

For the 1998 report, continue to assess support of the Class B(LR) aquatic life uses as FST based on assessment developed for the 1996 report. Information is older than 5 years, however, and assessment should be considered "evaluated" vs. "monitored" as defined by U.S. EPA guidelines for Section 305(b) reporting. Also used sampling by the U.S. Army Corps of Engineers in the Rathbun Lake watershed in 1997. Results of this sampling show no violations of the Class B(LR) WQ criterion for ammonia in 6 samples collected between May and Sept. 1997. In addition, none of the seven samples analyzed for atrazine and alachlor exceeded their MCLs (atrazine: ranged from 0.34 to 2.24 ug/l; alachlor ranged from 0.05 to 0.26 ug/l). The Honey Creek site was one of the few Rathbun Lake tributaries sampled for this study that did not have a violation of an MCL. Honey Creek is not designated for Class C drinking water uses. A summary of the 1997 ACOE monitoring is available. A review of the field sheets from the November 1990 DNR stream use assessments in Lucas County shows relatively poor diversity of the fish community (4 species from 2 families and 6 species from 3 families) for streams in the Central Irregular Plains ecoregion. Notes on field sheets indicate that presence of beaver dams may have influenced sampling results. Additional biological monitoring is needed to update this assessment and to determine the status of the aquatic communities of this stream. Field sheets for both assessments indicate relatively good habitat quality with no serious threats to support of the Class B(LR) uses, with the possible exception of channelization.

For the 2000 report: **SUMMARY:** The Class B(LR) aquatic life uses were assessed as "partially supported." **EXPLANATION:** The previous assessment of support of the Class B(LR) uses was based, in part, on results of DNR stream use assessments conducted in 1990. The results of these assessments are now considered too old (greater than five years) for characterizing current water quality conditions. The current assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted on the Honey Creek near Melrose (station RA-40) and in lower Honey Creek (station RA-43) by the Geological Survey (1998) and by Iowa State University/Limnology (1999) under contract with the U.S. Army Corps of Engineers-Kansas City District as part of the Rathbun Water Quality Project. The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). Results of this monitoring show no violations of Iowa Class B(LR) water quality criteria for pH in the combined 16 samples from both stations in 1999 or for ammonia-nitrogen in the combined 25 samples from both stations during 1998 and 1999. Although these results suggest "full support" of the Class B(LR) uses, two violations of the Class B(LR) criterion for dissolved oxygen (5 mg/l) in the combined 15 samples (13%) from both stations in 1999 suggest a potential impairment of these uses. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), "partial support" of beneficial uses is indicated if criteria are exceeded in from 11% to 25% of the samples for conventional parameters (pH, temperature, and dissolved oxygen). The two violations of the criterion for dissolved oxygen occurred in the samples collected from the lower Honey Creek station (RA-43) on August 18, 1999 (4.3 mg/l) and on September 13, 1999 (3.6 mg/l). Both samples were collected in early afternoon. Additional monitoring is needed to better define this potential impairment of the aquatic life uses. This additional monitoring is being conducted in 2000 as part of the ongoing Rathbun Water Quality Project. Monitoring conducted during 1998 and 1999 showed high levels of both nutrient parameters (total nitrogen and total phosphorus) and pesticides at stations RA-40 and RA-43 and at stations on other reservoir tributaries, with the highest levels often associated with storm runoff. The Iowa Water Quality Standards does not currently have aquatic life criteria for these nutrient parameters or for other nonpoint source-related parameters (for example, total suspended solids). Although this stream reach is not designated for Class C drinking water uses, the stream does flow to Rathbun Reservoir which is designated for Class C uses. The seasonal elevation of pesticides levels in the tributaries of the Rathbun watershed presents a continuing threat to full support of the Class C (drinking water) uses designated for Rathbun Reservoir. For example, of the 26 samples collected at stations RA-40 and RA-43 in 1998 and 1999, the four samples that exceeded the atrazine MCL of 3.0 ug/l were collected from late May through June following application of herbicides to farm fields and during months with typically high levels of rainfall. The mean levels of atrazine at Station RA-40 (Honey Creek near Melrose) were 4.90 ug/l in 1998 (N=10; maximum of 39.90 ug/l) and 4.89 ug/l in 1999 (N=10; maximum of 34.1 ug/l). The mean level of atrazine at Station RA-43 (lower Honey Creek) was 9.26 ug/l in 1999 (N=6; maximum of 48.5 ug/l) (this station was not sampled prior to 1999).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Southern Iowa River Basins

Chariton River Subbasin

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WOLF CR

-- mouth (Lucas) to headwaters

Waterbody ID No.: IA 05-CHA-0070

Subsegment No.: 0

Subsegment Description: mouth to trib S8,T70N,R22W Wayne Co.

Subsegment Length: 15 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted in 1998 and 1999 as part of the Rathbun Lake Water Quality Project. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the March 1991 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) habitat score (25) much better than overall median habitat score (22) for DNR stream use assessments, (2) fish score (11) better than 75th percentile score (10) for stream assessments made with seines, and (3) field notes that indicate diverse substrates, occurrence of pools/riffles, only isolated habitat alterations, and numerous snags in the stream. Continued support of the B(LR) uses is threatened by agricultural NPS impacts including stream channelization.

For the 1998 report, continue to use assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST). This assessment, however, was based on a 1991 stream use assessment. Because this information is greater than 5 years old, the assessment category should be considered "evaluated" vs. "monitored" as defined in U.S. EPA guidelines for preparation of Section 305(b) reports. Also used results of 1997 sampling by the U.S. Army Corps of Engineers as part of a Rathbun Lake watershed study that showed no violations of the Class B(LR) WQ criterion for ammonia in the 6 samples collected. Although Wolf Creek is not designated for Class C drinking water use, the stream is tributary to Rathbun Lake, a Class C lake. ACOE sampling showed that 2 of the 6 samples exceeded the MCL for atrazine; these samples were both collected in June 1997. The average level of atrazine in the six samples was 5.35 ug/l; median = 1.98 ug/l, and levels ranged from 0.05 to 20.6 ug/l. None of the six samples contained levels of alachlor that exceeded the 2.0 ug/l MCL. A summary of ACOE monitoring in the Rathbun Lake watershed in 1997 is available. A review of the field sheet for the 1991 DNR stream use assessment shows that sampling was conducted in early March; thus, results of fish sampling are suspect (too early in the year). The 5 species from 2 families captured contained only half of the expected fish taxa for streams in the Central Irregular Plains (40) ecoregion. The decision to continue to assess the Class B(LR) uses as FST is based on the relatively high habitat score from the 1991 DNR assessment and the typically poor fish sampling conditions in late winter. Additional biological monitoring is needed to update this assessment and to determine the status of the aquatic communities and habitats.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "partially supported." EXPLANATION: The previous assessment of support of the Class B(LR) uses was based, in part, on results of DNR stream use assessments conducted in 1991. The results of this assessment are now considered too old (greater than five years) for characterizing current water quality conditions. The current assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted on Wolf Creek near Chariton (station RA-41) by the U.S. Geological Survey (1998) and by Iowa State University/Limnology (1999) under contract with the U.S. Army Corps of Engineers-Kansas City District as part of the Rathbun Water Quality Project. The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). Results of this monitoring show no violations of Iowa Class B(LR) water quality criteria for pH in the 10 samples analyzed in 1999 or for ammonia-nitrogen in the 21 samples analyzed during 1998 and 1999. (The sample collected on November 10, 1998, however, had a level of ammonia-nitrogen of 3.03 mg/l. Because data for temperature and pH are not available for this sample, values of 10C and 8.0 pH units were estimated from data collected at this station in November 1999. According to the Iowa Water Quality Standards, the chronic Class B(LR) aquatic life criterion at 10C and 8.0 pH units is 3.0 mg/l. Thus, the ammonia-nitrogen level on November 10, 1998 is a potential violation of state aquatic life criteria. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), if data are collected monthly or more frequently, one violation of water quality criterion for a toxic contaminant does not suggest an impairment of the aquatic life uses. According to DNR's methodology for Section 305(b) reporting, the occurrence of this potential violation indicates that the Class B(WW) uses should be assessed as "fully supporting / threatened.") Although these results suggest "full support" of the Class B(LR) uses, two violations of the Class B(LR) criterion for dissolved oxygen (5 mg/l) in the nine samples (22%) analyzed in 1999 suggest a potential impairment of these uses. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), "partial support" of beneficial uses is indicated if criteria are exceeded in from 11% to 25% of the samples for conventional parameters (pH, temperature, and dissolved oxygen). Violations of the criterion for dissolved oxygen occurred in the samples collected on June 11, 1999 (4.7 mg/l) and on June 15, 1999 (4.7 mg/l). Both samples were collected relatively early in the morning (between 8:00 and 8:30 AM); however, these early collection times likely were not the primary factor in the low levels of dissolved oxygen. In addition, the levels of dissolved oxygen in the samples collected on August 18 and October 13, 1999, equaled the Class B(LR) aquatic life criterion of 5.0 mg/l. Additional monitoring is needed to better define this potential impairment of the aquatic life uses. This additional monitoring is being conducted in 2000 as part of the ongoing Rathbun Water Quality Project. Monitoring conducted during 1998 and 1999 showed high levels of both nutrient parameters (total nitrogen and total phosphorus) and pesticides at station RA-41 and at stations on other reservoir tributaries, with the highest levels often associated with storm runoff. Levels of total suspended solids The Iowa Water Quality Standards does not currently have aquatic life criteria for these nutrient parameters or for other nonpoint source-related parameters (for example, total suspended solids). Although this stream reach is not designated for Class C drinking water uses, the stream does flow to Rathbun Reservoir which is designated for Class C uses. The seasonal elevation of pesticides levels in the tributaries of the Rathbun watershed presents a continuing threat to full support of the Class C (drinking water) uses designated for Rathbun Reservoir. For example, of the 21 samples collected at Station RA-41 in 1998 and 1999, the five samples that exceeded the atrazine MCL of 3.0 ug/l were collected from late May to mid-July following application of herbicides to farm fields and during months with typically high levels of rainfall. The mean levels of atrazine at Station RA-41 were 4.44 ug/l in 1998 (N=11; maximum of 30.10 ug/l) and 6.47 ug/l in 1999 (N=10; maximum of 41.5 ug/l).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Southern Iowa River Basins

Chariton River Subbasin

FIVEMILE CR

-- mouth (Lucas) to headwaters

Waterbody ID No.: IA 05-CHA-0077

Subsegment No.: 0

Subsegment Description: mouth to trib S29,T71N,R22W Lucas Co.

Subsegment Length: 3.5 miles

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted in 1998 and 1999 as part of the Rathbun Lake Water Quality Project. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

Insufficient information; not assessed for the 1996 or 1998 reports.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "not supported." EXPLANATION: The assessment of support of the Class B(LR) uses is based on results of water quality monitoring conducted on Fivemile Creek near Derby (station RA-42) by the U.S. Geological Survey (1998) and by Iowa State University/Limnology (1999) under contract with the U.S. Army Corps of Engineers-Kansas City District as part of the Rathbun Water Quality Project. The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). Results of this monitoring show no violations of Iowa Class B(LR) water quality criteria for pH in the 9 samples analyzed in 1999 or for ammonia-nitrogen in the 15 samples analyzed during 1998 and 1999. Although these results suggest "full support" of the Class B(LR) uses, four violations of the Class B(LR) criterion for dissolved oxygen (5 mg/l) in the nine samples (44%) analyzed in 1999 suggest an impairment of these uses. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), beneficial uses should be assessed as "not supported" if criteria are exceeded in more than 25% of the samples for conventional parameters (pH, temperature, and dissolved oxygen). Violations of the criterion for dissolved oxygen occurred in the four consecutive monthly samples collected on July 13, 1999 (4.6 mg/l), August 18, 1999 (2.1 mg/l), September 13, 1999 (4.4 mg/l), and October 13, 1999 (2.6 mg/l). Samples were collected during mid-morning (between 9:00 and 10:00 AM). Additional monitoring is needed to better define this potential impairment of the aquatic life uses. This additional monitoring is being conducted in 2000 as part of the ongoing Rathbun Water Quality Project. Monitoring conducted during 1998 and 1999 showed high levels of both nutrient parameters (total nitrogen and total phosphorus) and pesticides at station RA-42 and at stations on other reservoir tributaries, with the highest levels often associated with storm runoff. The levels of nutrients, herbicides, and total suspended solids in Fivemile Creek in 1999 were some of the highest observed in the Rathbun watershed. The Iowa Water Quality Standards does not currently have aquatic life criteria for these nutrient parameters or for other nonpoint source-related parameters (for example, total suspended solids). Although this stream reach is not designated for Class C drinking water uses, the stream does flow to Rathbun Reservoir which is designated for Class C uses. The seasonal elevation of pesticides levels in the tributaries of the Rathbun watershed presents a continuing threat to full support of the Class C (drinking water) uses designated for Rathbun Reservoir. For example, of the 14 samples collected at Station RA-42 in 1998 and 1999, the four samples that exceeded the atrazine MCL of 3.0 ug/l were collected in June and early July following application of herbicides to farm fields and during months with typically high levels of rainfall. The mean levels of atrazine at Station RA-42 were 2.14 ug/l in 1998 (N=7; maximum of 8.70 ug/l) and 11.72 ug/l in 1999 (N=7; maximum of 53.4 ug/l).

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Southern Iowa River Basins

Grand River Subbasin

THOMPSON R

-- IA/MO line to Long Creek

Waterbody ID No.: IA 05-GRA-0040

Subsegment No.: 0

Subsegment Description: IA/MO line to Long Cr, Decatur Co.

Subsegment Length: 30 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) DNR quarterly monitoring during FY96 and FY97 near Davis City and (2) fish tissue (RAFT) monitoring in 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. forms indicate better than average habitat. A moderate diversity of habitat provided by riffles, woody debris, and deep water habitat. Good flow to support game fish pop. and diversity of nongame species. Good diversity of fish found at one location. Size of stream may have hindered sampling effectiveness at other location where fewer types and numbers of fish were observed.

For the 1996 report, used assessment of support of the Class B(WW) aquatic life uses developed for the 1994 report.

For the 1998 report, upgraded the assessment of support of the Class B(WW) aquatic life uses from FST to FS due to (1) results of quarterly monitoring between Oct.95 & July 1997 at the DNR quarterly station nr Davis City showed no violations of Class B(WW) WQ criteria for either toxic or conventional pollutants in the 8 samples collected over the two-year period, (2) a review of the field sheets from the July 1991 DNR stream use assessments near Terre Haute and Decatur City showed a relatively diverse fish community (15 species from 4 families at the Terre Haute site) and the presence of nearly all of the expected fish taxa (7 of 8) for streams in the Central Irregular Plains (40) ecoregion, and (3) presence of the expected game fish species (channel catfish, reported as "common" at the Terre Haute site; several YOY & larger adults present up to 18" TL). Habitat assessments at both assessment sites show above average aquatic habitats and do not indicate any significant threats to the continued support of the Class B(WW) uses. Support of the fish consumption uses was assessed as FS due to results of fish contaminant monitoring conducted as part of the 1997 DNR/U.S. EPA RAFT program that showed levels of all contaminants below 1/2 the respective FDA action levels in the composite sample of fillets from channel catfish.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported." Fish consumption uses remain "fully supported." EXPLANATION: The previous assessment of support of the Class B(WW) uses was based, in part, on results of DNR stream use assessments conducted in 1991. The results of these assessments are now considered too old (greater than five years) for characterizing current water quality conditions. Thus, the current assessment was based on results of water quality monitoring during the 1996-1997 biennial period at the DNR quarterly monitoring station at Davis City (see assessment for the 1998 report above). Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Davis City station began in October 1999. Fish consumption uses remain "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1997 (see assessment for the 1998 report above).

Rivers and Streams: Southern Iowa River Basins

Grand River Subbasin

LONG CR

-- mouth (Decatur) to headwaters

Waterbody ID No.: IA 05-GRA-0120

Subsegment No.: 0

Subsegment Description: mo to E Long Cr S36,T71N,R27W Clarke Co

Subsegment Length: 15 miles

ASSESSMENT COMMENTS: 1991 SUAs: hhabscrs/fshscrs=22/12, 22/12 (shock); 1995 biocriteria sampling site, Decatur SWMA; Fish IBI=59 (good), BM-IBI=63 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assess. form indicates generally average quality habitat. Sand substrate is dominant. Old channelization impacts are evident. Timber riparian vegetation results in numerous snags which provide cover and structure in the stream. Fairly diverse fish community, but numbers of fish observed were somewhat low. Fishermen at bridge with catch of channel catfish. Sediment and extremes of flow are probable threats to integrity of aquatic community.

1996: Used data from one biocriteria site in Decatur County to update use support determination. Fish and habitat metrics from stream use assessment protocol were applied to the data. Data indicate reasonably good habitat for B(LR) stream and good diversity and numbers of fish including channel catfish, flathead catfish and trout-perch. Maybe should consider B(WW) designation.

For the 1998 report, continued to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1994 and 1996 reports (=FST). A review of the field sheets from the two DNR stream use assessments in July 1991 shows relatively diverse fish communities (14 species from 4 families and 11 species from 4 families) for streams in the Central Irregular Plains (40) ecoregion, while results of the 1995 biocriteria sampling in the DeKalb Wildlife area showed a very diverse fish community of 21 species from 6 families. Results of biological monitoring at all three locations show that a majority of the expected fish taxa for streams in this region are present (7 of 8, 5 of 8, and 7 of 8). Field sheets from the 1991 DNR stream use assessments indicate that frequent channel alterations in the upper portion of the Class B(LR) reach may threaten support of the Class B(LR) uses; otherwise no significant threats to the Class B(LR) uses were noted.

2000 report: The DNR/EPD stream assessment project data collected in 1991 were not used to determine the degree of aquatic life use support for this waterbody segment because the data are more than five years old, and no longer considered current. The assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) - 100 (maximum).

The F-IBI score was 59 (good), and the BM-IBI score was 63 (good). The aquatic life use support status was assessed as fully supporting (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998. Previous assessment summaries suggest that channel alterations (e.g., channelization), flow fluctuation, and sediment are the primary threats to the health of this stream's biological community.

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Rivers and Streams: Southern Iowa River Basins

Grand River Subbasin

LOTT'S CR

-- IA/MO line to headwaters

Waterbody ID No.: IA 05-GRA-0170

Subsegment No.: 0

Subsegment Description: IA/MO line to Tuckers Cr (Ringold Co.)

Subsegment Length: 4.5 miles

ASSESSMENT COMMENTS: 1991 SUA: habscore/fshscore=24/11 (shock). 1996 Biocriteria: Fish IBI=30 (fair), BM-IBI=50 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates better than average habitat for small southern Iowa streams. Good development of pools noted. Woody debris, gravel, and hardpan provide substrate diversity and structure. Some pool habitat too deep to wade. Fairly diverse fish community, but most species with low numbers. Aquatic community probably threatened by isolated channeliz. and extreme fluctuation of flow. Stream was viewed at another location where habitat was not as good. Pasture impacts were evident and stream was more shallow.

For the 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (FST).

For the 1998 report, used results of the 1996 biocriteria sampling at the Ringold State Wildlife Management Area to update the assessment and to assess support of the Class B(LR) aquatic life uses as FS due to (1) presence of a relatively diverse fish community of 16 species from 5 families, (2) presence of nearly all (7 of 8) of the expected fish taxa for streams of the Central Irregular Plains ecoregion, and (3) lack of violations of Class B(LR) water quality criteria in the sample collected during biocriteria sampling.

For the 2000 report: The DNR/EPD stream assessment project data collected in 1991 were not used to determine the degree of aquatic life use support for this waterbody segment because the data are more than five years old, and no longer considered current. The assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 30 (fair), and the BM-IBI score was 50 (fair). The aquatic life use support status was assessed as fully supporting/threatened (=FS/T), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998. Previous stream use assessment data sheets suggest that channelization, fluctuation in stream flow, and riparian grazing impacts are the primary threats to the aquatic biological community.

Nodaway River Subbasin

NODAWAY R

-- E Nodaway R to M Nodaway R

Waterbody ID No.: IA 05-NOD-0020

Subsegment No.: 0

Subsegment Description: E Nodaway R (Page Co.) to M Nodaway R (Montgomery Co.)

Subsegment Length: 20 miles

ASSESSMENT COMMENTS: Assessment is based on results from (1) fish tissue (RAFT) monitoring in 1994 and (2) the "Iowa Atrazine Voluntary Monitoring Program in 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Fully	Drinking Water Supply	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used information from Iowa Fish & Fishing (Harlan et al. 1987: 14) to assess the support of Class B(WW) aquatic life uses as PS due to impacts of extensive channelization. No information available for assessing support of Class C uses at Clarinda.

For the 1998 report, upgraded the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report from PS to FST, with the primary threat being habitat alterations due to extensive channelization. Results of DNR WQ monitoring near Shambaugh show no violations of Class B(WW) WQ criteria for either toxic or conventional contaminants in the eight samples collected from Oct 93 to Jul 95. Thus, WQ monitoring suggests good water quality in this river reach. Results of fish contaminant monitoring conducted in 1994 as part of the U.S. EPA/ DNR Regional Ambient Fish Tissue (RAFT) monitoring program showed that levels of all contaminants in the sample of channel catfish were less than 1/2 of the respective FDA action levels; thus, fish consumption uses were assessed as FS. Support of the Class C drinking water uses were assessed as FS due to levels of nitrate well below the MCL of 10 mg/l as N: levels of nitrate in the 8 samples collected from Oct 93 to Jul 95 ranged from 0.6 to 4.7 mg/l as N. No information is available on levels of pesticides. Follow-up monitoring is needed to determine the status of aquatic communities and to determine the degree to which the Class B(WW) uses may be impaired. The assessment of support of the Class B(WW) uses developed for the 1996 report (=PS) was developed without either chemical or biological information.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses are considered "not assessed," and the Class C drinking water uses were assessed as "fully supported." The fish consumption uses remain assessed as "fully supported." EXPLANATION: The previous assessments of support of the Class B(WW) uses and Class C uses were based on results from the DNR quarterly monitoring station near Shambaugh (station 787044). This station was last monitored from October 1993 through September 1995, and data from this monitoring period are considered too old (greater than five years) for characterizing current water quality conditions. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Shambaugh station began in October 1999. Results from this monitoring will allow development of an updated assessment of support of beneficial uses for the 2002 report. The Class C (drinking water) uses were assessed as "fully supported" based on the 1998 results of the Novartis "Iowa Voluntary Atrazine Monitoring Program." This monitoring showed that the time-weighted mean level of atrazine in samples collected Clarinda's raw water source from January to December 1998 (0.3 ug/l, N=30, maximum=2.0 ug/l) was well below the MCL of 3.0 ug/l. Based on DNR's Section 305(b) assessment methodology, these results, combined with the historical low levels of nitrate (see assessment for the 1998 report above), suggest "full support" of the Class C (drinking water) uses. Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in early fall 1994 (see assessment for the 1998 report above). Station 787044 is now being monitored on a monthly basis as part of DNR's expanded water quality monitoring program.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Southern Iowa River Basins

Nodaway River Subbasin

E NODAWAY R

-- mouth (Page) to Kemp Cr (Adams)

Waterbody ID No.: IA 05-NOD-0030

Subsegment No.: 1

Subsegment Description: mouth (Page Co.) to Long Branch Cr (Taylor Co.)

Subsegment Length: 29 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR/UHL biocriteria sampling in 1998 (Fish IBI= 30(fair), BM-IBI= 59(fair)).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Stream assess. forms indicate habitat in some reaches is degraded because of old, long reach channelization. Habitat is better in other reaches where the stream meanders & flows over bedrock outcrops. Fish community is relatively diverse in good habitat areas, less diverse in other reaches. Good populations of channel catfish observed at both assess. locations. DNR quarterly monitoring station was sampled 8 time between Oct. 91 and July 1993: no violations of any Class B(WW) WQC.

For 1996 report, used assessment of support of the Class B(WW) aquatic life uses developed for the 1994 report.

For the 1998 report, used a review of the field sheets from the two 1991 DNR stream use assessments to upgrade the assessment of support of the Class B(WW) aquatic life uses from PS to FST due to (1) presence of good populations of the expected game fish species (channel catfish) at both locations, with flathead catfish also present at Hawleyville (YOY at both locations, abundant at Hawleyville; adults from 12 to 18" TL at Shambaugh), (2) presence of a majority of the expected fish taxa for streams in the Missouri River portion of the Southern Iowa Rolling Loess Prairies (47f) subecoregion at both locations (4 of 6 at Shambaugh; 6 of 6 at Hawleyville), (3) presence of the typical fish diversity (8 species from 3 families) at Shambaugh to exceptional diversity (15 species from 4 families) at Hawleyville, (4) habitat scores equal to, or better than, the overall median habitat score for DNR stream use assessments conducted from 1990-1995, and (5) lack of violations of Class B(WW) WQ criteria at the DNR quarterly WQ monitoring station near Shambaugh during 1992 and 1993. Primary threats to continued support of the Class B(WW) uses include impacts of old channelization, streambank erosion, and siltation.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were assessed as "fully supported / threatened." The fish consumption uses remain "not assessed." EXPLANATION: The previous assessment of support of the Class B(WW) uses ("fully supported / threatened") was based on (1) results from the DNR quarterly monitoring station near Clarinda (station 780809) from October 1991 to September 1993 and (2) results of two DNR stream use assessments in 1991 (see assessment for the 1998 report above). The data from both these sources are now considered too old (greater than five years) for characterizing current water quality conditions. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Clarinda station began in October 1999. Results from this monitoring will allow development of an updated assessment of support of beneficial uses for the 2002 report. The current assessment is based on results of a DNR/UHL biocriteria sampling of fish and benthic macroinvertebrates in 1998. Based on a comparison to results of ecoregion reference site sampling, both the fish and benthic macroinvertebrate communities were rated "fair" (fish IBI=30; MB IBI=59). These results suggest that the Class B(WW) uses are "fully supported / threatened." Fish consumption uses remain "not assessed" due to the lack of recent fish tissue monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Southern Iowa River Basins

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Nodaway River Subbasin

M NODAWAY R

-- W Fk M Nodaway R to headwaters

Waterbody ID No.: IA 05-NOD-0070

Subsegment No.: 0

Subsegment Description: W Fk M Nodaway > trib S1,T75N,R32W Adair

Subsegment Length: 18 miles

ASSESSMENT COMMENTS: 1990 SUA: habscore/fshscore=19/12 (seine); 1998 Biocriteria: Fish IBI= 19(poor), BM-IBI= 44(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting

Aquatic Life Support -- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assessment form indicates fairly poor habitat. Shallow run habitat is dominant. Little diversity of substrate types observed. Relatively low diversity of fish. High percentage of pollution tolerant species.

For the 1996 report, used assessment of support of Class B(LR) aquatic life uses developed for the 1994 report (PS).

For the 1998 report, used a review of the field sheet from the October 1990 DNR stream use assessment approximately 2 mi NW of Greenfield to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to (1) presence of a majority of the expected fish taxa (5 of 6) for streams in the Missouri River portion of the Southern Iowa Rolling Loess Prairies subcoregion, (2) presence of a regionally typical fish community with relatively low diversity (7 species from 2 families), and (3) indications on the field sheet of relatively few habitat problems, with a fairly well-meandered channel form and relatively stable stream banks. The data upon which this assessment is based is well over 5 years old. Additional monitoring is needed to update the assessment and to determine the status of the aquatic communities and habitats.

For the 2000 report, the assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 19 (poor) and the BM-IBI score was 44 (fair). The aquatic life use support was assessed as not supporting (=NS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Southern Iowa River Basins

Nodaway River Subbasin

W NODAWAY R

-- Sevenmile Creek to headwaters

Waterbody ID No.: IA 05-NOD-0100

Subsegment No.: 2

Subsegment Description: Threemile Cr to Whislers Branch (Cass)

Subsegment Length: 18 miles

ASSESSMENT COMMENTS: 1991 SUA: habscore/fshscore=23/12 (shock). 1998 Biocriteria: Fish IBI= 19(poor), BM-IBI= 65(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates fairly good habitat. Pools and riffles formed in hardpan (till) strata provide habitat diversity. Stream is meandering. Woody debris snags and root wads were also observed. Relatively diverse fish community.

For the 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (FST).

For the 1998 report, used a review of the field sheet from the September 1991 DNR stream use assessment 4 mi NE of Grant in Cass County to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of a relatively diverse fish community (12 species from 4 families) for streams in the Southern Iowa Rolling Loess Prairies (47f) subcoregion, (2) presence of all the expected fish taxa (6 of 6) for streams in the Missouri River portion of this subcoregion, and (3) indications on the field sheet of above average habitat quality due to good diversity of substrates, well-meandered channel form, pool/riffle sequences formed in hardpan, and lack of significant impacts from channelization or streambank erosion.

For the 2000 report, the assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 19 (poor) and the BM-IBI score was 65 (good). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Southern Iowa River Basins

Nishnabotna River Subbasin

NISHNABOTNA R

-- IA/MO line to E & W Nishes

Waterbody ID No.: IA 05-NSH-0010

Subsegment No.: 0

Subsegment Description: IA/MO line to conf of E & W Nishnabotas, Fremont Co.

Subsegment Length: 5.4 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring in 1995. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Not assessed

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: This reach of river is channelized & leveed; the primary impairment to habitat is channelization. Secondary impacts are removal of riparian vegetation (especially trees) and siltation from agricultural NPS.

For 1996 report, had no violations of Class B(WW) WQ criteria in five samples collected by USGS during water year 1993 at the Hamburg monitoring station; station discontinued by USGS after the 1993 water year. All levels of contaminants in sample of carp filets collected for the 1995 RAFT program were less than 1/2 the FDA action levels. Account in "Iowa Float Trips" states that the Nishnabotna remains channelized throughout.

For the 1998 report, due to lack of either recent chemical or biological information, changed the assessment of support of the Class B(WW) aquatic life uses to NAS. Fish consumption uses remain assessed as FS based on results of 1995 RAFT fish tissue monitoring. Previous assessments of the lower Nishnabotna River were developed without the benefit of information on the condition of the biological communities protected by the Class B(WW) water quality standards. Monitoring is needed to determine the status of the aquatic communities and to determine the degree to which the Class B(WW) uses may be impaired.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain "not assessed." The fish consumption uses remain "fully supported." EXPLANATION: The most recent water quality monitoring data for this river reach are from 1993 (see above). These data are now considered too old (greater than five years) for characterizing current water quality conditions. Thus, the Class B(WW) aquatic life uses were considered "not assessed" for both the 1998 report and the current (2000) report. Fish consumption uses remain "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1995 (see assessment for the 1996 report above).

Rivers and Streams: Southern Iowa River Basins

Nishnabotna River Subbasin

E NISHNABOTNA R

-- mouth to Indian Cr. at Lewis

Waterbody ID No.: IA 05-NSH-0020

Subsegment No.: 2

Subsegment Description: Shenandoah WWTP to Page/Montgomery county line

Subsegment Length: 63 miles

ASSESSMENT COMMENTS: Assessment is based on results from the DNR monthly water quality monitoring station at Hwy 59 near Shenandoah. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: No violations of Class B(WW) WQC during biennial period; thus, should assess as FST due to known threats due to agricultural NPS. Rivers in this region, however, are impaired by stream channelization, removal of riparian vegetation (especially trees), streambank destabilization, and by agricultural development. These impairments cause habitat alterations (i.e., loss of amount and quality of habitat due to siltation, stream widening, and unfavorable flow regimes in wide, silt/sand channels.) Thus, assess this reach as PS its aquatic life uses. For 1992 report, had 1 of 36 samples exceed WQC for TRC (=FST). All fish contams < 1/2 FDA action levels (but barely).

For 1996 report, used assessment of support of the Class B(WW) aquatic life uses developed for previous reports (=PS). No violations of Class B(WW) in 24 samples from the DNR fixed water quality monitoring station at Shenandoah.

For the 1998 report, due to lack of biological information, based the assessment of the Class B(WW) aquatic life uses on results of monthly water quality monitoring at the DNR station at Shenandoah: no violations Class B(WW) WQ criteria for either conventional or toxic pollutants occurred in the 24 samples collected during the October 1995 to September 1997 period. Although this reach is not designated for Class C drinking water uses, results of pesticide monitoring show no levels of atrazine or alachlor in the 24 samples collected from Oct 95 through Sept. 1997 that exceed MCLs (ranges: atrazine: 0.1-1.7 ug/l; alachlor: 0.1-0.4 ug/l). Data for levels of toxic contaminants in fish are from the 1990 RAFT and are thus considered too old (>5 years) for making "monitored" Section 305(b) assessments. The assessment of support of the Class B(WW) aquatic life uses was developed without the benefit of biological information. Monitoring is needed to determine the status of the aquatic communities and habitats in this reach of river and to determine to what degree the Class B(WW) uses may be impaired. Assessment of the Class B(WW) aquatic life uses was set at FST due to potential impacts of extensive channelization and other impact in the riparian corridor of this stream (e.g., stream bank erosion and removal of natural riparian vegetation).

For the 2000 report, SUMMARY: Class B(WW) aquatic life uses were assessed as "fully supporting" and fish consumption uses were considered "not assessed." EXPLANATION: Class B(WW) aquatic life uses were assessed as "fully supporting" due to the lack of violations of Class B(WW) water quality criteria in (1) the 24 samples analyzed for conventional and toxic parameters (dissolved oxygen, pH, and ammonia-nitrogen) and (2) the one sample analyzed for toxic metals at the DNR monitoring station at the Highway 59 bridge north of Shenandoah (station 821008) during the 1998-1999 biennial period. For the 1998 report, the Class B(WW) aquatic life uses were assessed as "fully supported" but "threatened" due to historical impacts of extensive channelization and other impacts of the riparian corridor of the East Nishnabotna River and due to other impacts in the riparian corridor (see above). This assessment of "threatened," however, was strictly a "best professional judgement" and was not supported by field assessments of either habitat or the biological communities. Until such assessments are conducted, the assessment of support of the Class B(WW) uses will be based only on results of the available information on chemical water quality monitoring and the comparisons of these results to the Iowa Water Quality Standards. Thus, the Class B(WW) uses were assessed as "fully supporting" for the 2000 report. Although this river reach is not designated for Class C (drinking water) uses, results of pesticide monitoring show no levels of atrazine in the 24 samples collected from October 1997 through September 1999 that exceeded the MCL of 3.0 ug/l (maximum: 1.6 ug/l). Similarly, levels of nitrate in the 24 samples were all below the 10 mg/l MCL (maximum: 9.3 mg/l; mean: 6.1; standard deviation = 1.85 mg/l). Fish consumption uses were considered "not assessed due to the lack of recent fish tissue monitoring in this river reach. Although fish consumption uses were assessed for the 1996 and 1998 reports based on EPA/DNR fish tissue (RAFT) monitoring near Red Oak (see above), this monitoring was conducted well upstream from this waterbody segment. Thus, the fish contaminant data from near Red Oak are of questionable use for characterizing fish contaminant levels in this assessment segment.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Southern Iowa River Basins

Nishnabotna River Subbasin

E NISHNABOTNA R

-- Indian Cr (Lewis) to headwater

Waterbody ID No.: IA 05-NSH-0030

Subsegment No.: 1

Subsegment Description: Indian Cr (Cass Co.) to Troublesome Cr near Atlantic

Subsegment Length: 43 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring in 1994 near Lewis. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Not assessed

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996 report, used results of RAFT monitoring in 1994 to assess support of Class B fish consumption uses as FS due to levels of all contaminants well below FDA action levels. In the mid and late-1980s, fish from this site tended to have levels of dieldrin that approached, and occasionally exceeded, the FDA action level for dieldrin. No other information exists for developing an assessment of the other Class B(WW) aquatic life uses.

For the 1998 report, continued to use the assessment of support of the Class B(WW) fish consumption uses developed for the 1996 report (=FS). The Class B(WW) aquatic life uses were not assessed due to the lack of either chemical or biological information for this reach of river. Additional monitoring is needed to provide the information necessary to develop an accurate assessment of the degree to which the Class B(WW) aquatic life uses are supported.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain "not assessed." The fish consumption uses remain assessed as "fully supported." EXPLANATION: Due to the lack of data from either chemical or biological monitoring for this river reach, the assessment of support of the Class B(WW) uses remained "not assessed." Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring near Lewis in early fall 1994 (see assessment for the 1996 and 1998 reports above). Fish from this site will again be analyzed as part of the 2000 EPA/DNR fish tissue monitoring program.

Rivers and Streams: Southern Iowa River Basins

Nishnabotna River Subbasin

PILOT BR

-- mouth to headwaters

Waterbody ID No.: IA 05-NSH-0039

Subsegment No.: 0

Subsegment Description: mouth (Montgomery Co.) to headwaters

Subsegment Length: 5.1 miles

ASSESSMENT COMMENTS:

1996 biocriteria: IBI=30, 10 spp; 2 fams.

1996 Biocriteria: Fish IBI= 40 (fair), BM-IBI= 62 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support

-- Threatened

Aquatic Life Support

-- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed prior to the 1998 report. For the 1998 report, used results of the September 1996 DNR biocriteria sampling near Stennett to assess support of the general uses as FST due to (1) presence of a moderately diverse fish community for Loess Hills and Rolling Prairies subcoregion (10 spp., 2 fams), (2) presence of a majority of the regionally expected fish taxa (4 of 7), and lack of violations of Class B(LR) WQ criteria in the sample collected during biocriteria sampling.

2000 report: The assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 40 (fair), and the BM-IBI score was 62 (good). The aquatic life use support status was assessed as fully supporting/threatened (=FS/T), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Southern Iowa River Basins

Nishnabotna River Subbasin

INDIAN CR

-- mouth to headwaters

Waterbody ID No.: IA 05-NSH-0040

Subsegment No.: 0

Subsegment Description: mo to Wolf Cr S35,T79N,R37W Shelby Co.

Subsegment Length: 23 miles

ASSESSMENT COMMENTS: 1991 SUA: habscr/fshscr=25/12 (shock). 1996 Biocriteria: Fish IBI=22 (poor), BM-IBI=51 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates above average habitat and fish community. Channelization and flow stability are probably greatest stressors of the aquatic community.

For the 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST).

For the 1998 report, used results of the October 1996 DNR biocriteria sampling near Lewis to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a majority of the expected fish taxa (5 of 7) for streams in the Loess Hills and Rolling Prairies subecoregion and (2) lack of violations of Class B(LR) WQ criteria in the sample collected during biocriteria sampling.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 22 (poor) and the BM-IBI score was 51 (fair). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Southern Iowa River Basins

Nishnabotna River Subbasin

W NISHNABOTNA R

-- Silver Cr to E Br W Nish.

Waterbody ID No.: IA 05-NSH-0080

Subsegment No.: 0

Subsegment Description: Silver Cr (Mills Co.) to E Br W Nishnabotna (Shelby Co.)

Subsegment Length: 46 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR quarterly water quality monitoring near Malvern in FFY98 and FFY99. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: No violations of Class B(WW) WQC; thus should assess as FST due to known threats from agricultural NPS. Rivers in this portion of the state, however, are impaired due to several factors: (1) removal of riparian trees with the resultant destabilization of stream banks and habitat degradation; (2) high rates of erosion from agricultural land contribute large amounts of sediment to stream channels with resultant siltation of substrates and habitat degradation; (3) channelization that results in widening of channel and further degradation of habitat.

For 1996 report, used assessment of support of the Class B(WW) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, upgraded the assessment of support of the Class B(WW) aquatic life uses from PS to FST due to (1) lack of violations of Class B(WW) WQ criteria in the 8 samples collected from November 1989 and September 1991 (thus suggesting full support of use) and (2) lack of additional information (e.g., biological information) for determining whether the Class B(WW) uses are impaired. Additional monitoring is needed to determine the status of the aquatic communities and habitats of this river and to determine the degree to which the Class B(WW) uses might be impaired. The WQ data from the DNR quarterly monitoring station are more than 5 years old; thus, the assessment category was downgraded to "evaluated." Another two-year cycle of quarterly WQ monitoring at this station began in October 1998.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: The assessment of support of the Class B(WW) uses is based on results from the DNR quarterly monitoring station on the West Nishnabotna River near Malvern. The Class B(WW) uses were assessed as "fully supported" due to (1) the lack of violations of Class B(WW) criteria for pH, dissolved oxygen, and ammonia-nitrogen in the eight samples analyzed during the 1998-1999 biennial period and (2) the lack violations of Class B(WW) chronic criteria for toxic metals in the two samples analyzed during this biennial period. This assessment was based on results of quarterly monitoring. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Malvern station began in October 1999. Fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this river reach.

Rivers and Streams: Southern Iowa River Basins

Nishnabotna River Subbasin

W NISHNABOTNA R

-- E.Br. W. Nishna to headwaters

Waterbody ID No.: IA 05-NSH-0090

Subsegment No.: 2

Subsegment Description: W F W Nish > trib S34,T83N,R36W Carroll

Subsegment Length: 48 miles

ASSESSMENT COMMENTS: Habscore/fshscore=23/8 (shock & seine), 16/10 (shock); 1994 Biocriteria: Fish IBI= 33(fair), 28 (fair), BM-IBI= 67(good), 59(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates substantial channeliz. impacts and monotypic habitat and substrate. Relatively few fish dominated by pollution tolerant species.

For the 1996 report: data from biocriteria sampling site was used to update the use support determination. Sampling results generally agreed with earlier stream assessment results.

For the 1998 report, changed the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to results of the August 1994 DNR biocriteria sampling that showed this reach of the W. Nishnabotna to support a fish community typical of the Class B(LR) streams in this region (9 spp; 4 fams were captured). Thus, despite the considerable habitat alterations in this reach, the composition of the fish community strongly suggests that the Class B(LR) water quality standards are fully supported (5 of the 7 fish taxa expected in streams of the Loess Hills and Rolling Prairies (47e) subcoregion were captured during the biocriteria sampling, thus suggesting that the Class B(LR) uses are FST). The number of fish per species, however, was unusually low (approximately 10). Follow-up monitoring is needed to determine the status of the aquatic communities and to determine whether the Class B(LR) uses may be impaired.

For the 2000 report, the assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria project. This stream reach was sampled as part of follow-up monitoring to better identify suspected water quality impacts (see assessment for the 1998 report above). A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

This stream reach was sampled at two locations. The F-IBI scores were 31 (fair) and 7 (very poor); the BM-IBI scores were 67 (good) and 59 (good). The aquatic life use support of this stream reach was assessed as "fully supported / threatened (=FST) based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Nishnabotna River Subbasin

WALNUT CR

-- mouth to headwaters

Waterbody ID No.: IA 05-NSH-0100

Subsegment No.: 1

Subsegment Description: mo to trib S30,T73N,R38W Montgomery Co.

Subsegment Length: 55 miles

ASSESSMENT COMMENTS: 1991 SUAs: habsrcs/fshscrs=22/10, 23/12, 26/11; 1996 Biocriteria: Fish IBI= 23(poor), 20(poor); BM-IBI= 53(fair), 45(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. forms indicate old channelization impacts. Little diversity in substrate and few pool/riffle sequences in most reaches. One reach with very good habitat NW of Red Oak. Fish community dominated by cyprinids and catfish species. Sucker species not observed.

For the 1996 report, used assessment of support of the Class B(WW) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, used results of the October 1996 DNR biocriteria samplings upstream and downstream from a bridge 4 mi. WNW of Red Oak, in combination with the 3 DNR stream use assessments conducted in 1991, to upgrade the assessment of support of the Class B(WW) aquatic life uses from PS to FST due to (1) presence of nearly all (7 of 8) of the expected fish taxa for streams in the Loess Hills and Rolling Prairies subcoregion, (2) lack of violations of Class B(WW) WQ criteria in the sample collected during biocriteria samplings, and (3) results of 1991 stream use assessments that showed a good population of adult and juvenile channel catfish (lack of channel catfish in the 1996 biocriteria sampling may have been due to high stream flows that hindered sampling effectiveness or due to sampling late in the season (mid-October)). Primary threats to continued support of the Class B(WW) uses include excessive pasturing of the riparian corridor of this stream as well as excessive stream bank and gully erosion that contribute sediment to the altered (i.e., channelized) stream channel.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 23 (poor) and the BM-IBI score was 53 (fair). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Southern Iowa River Basins

Nishnabotna River Subbasin

JORDAN CR

-- mouth to headwaters

Waterbody ID No.: IA 05-NSH-0133

Subsegment No.: 0

Subsegment Description: mouth to Spring Cr, Pottawattamie Co.

Subsegment Length: 5.7 miles

ASSESSMENT COMMENTS: 1994 biocriteria: habscr/fshscr = 22/11 (shock). 1991 SUA: habscr/fshscr: 22/8. 1994 Biocriteria: Fish IBI=46 (fair), BM-IBI=65 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Sampling information from one biocriteria site in Pottawattamie Co. was used to make use support determination. The stream had a fair number of species (11), but low numbers of fish. The stream had excessive sediment accumulation in slack water areas. The water was turbid, which may have reduced sampling effectiveness. The stream was given an FST assessment instead of PS because it has reasonably good habitat for a small stream of that region. There was evidence of recent flooding (sometime earlier in the year) which may have had something to do with low numbers of fish found.

For the 1998 report, continued to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST). A review of sampling results from the 1994 DNR biocriteria sampling shows that nearly all of the expected fish taxa (6 of 7) for streams of the Loess Hills and Rolling Prairies (47e) subecoregion were present. Low numbers of fish observed in the 1994 biocriteria sampling and the October 1991 DNR stream use assessment suggest a threat to the aquatic community. Additional monitoring is needed to better determine the status of the aquatic communities of this stream and to determine any threats to the continued full support of the Class B(LR) uses.

For the 2000 report, the assessment was based on data collected in 1994 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 46 (fair) and the BM-IBI score was 65 (good). The aquatic life use support was assessed as fully supported (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Southern Iowa River Basins

Nishnabotna River Subbasin

GREYBILL CR

-- mouth (Pott) to headwaters

Waterbody ID No.: IA 05-NSH-0135

Subsegment No.: 0

Subsegment Description: mouth to trib S21,T75N,R39W Pott. Co.

Subsegment Length: 9.5 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR stream use assessment in September 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report (not designated for Class B(LR) uses until 1995).

For the 1996 report, used results of the September 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as PS due to (1) habitat score (19) worse than the overall median score (22) for DNR stream use assessments and (2) indications on field sheet of little diversity of substrate, few pools and/or riffles, extensive channel alterations due to channelization, and frequent bank instability. Fish community composed of the expected turbidity-tolerant fish species for SW Iowa streams (7 species; all cyprinids).

For the 1998 report, used a review of the field sheet from the September 1994 DNR stream use assessment to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to the presence of a majority of the expected fish taxa (5 of 7) for streams in the Loess Hills and Rolling Prairies (47e) subecoregion. Due to difficult sampling conditions during the 1994 stream assessment (high, fast flowing water), other species may have been present. Extensive channel straightening and frequent streambank erosion were identified as the primary habitat impacts.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain "fully supported / threatened." EXPLANATION: Continue to use the assessment developed for the 1998 report (see above) that was based on the September 1994 DNR stream use assessment in Pottawattamie County. The results of the 1994 DNR stream use assessment are approximately 5 years old and thus can be used to assess current water quality conditions.

Rivers and Streams: Southern Iowa River Basins

Nishnabotna River Subbasin

W NISHNABOTNA R, E BR

-- mouth to headwaters

Waterbody ID No.: IA 05-NSH-0140

Subsegment No.: 0

Subsegment Description: mo (Pott.) to Lone Willow Cr. Audubon Co

Subsegment Length: 31 miles

ASSESSMENT COMMENTS: Habscrs/fshscrs=22/12 (shock) for both the 1991 SUA; 1994 Biocriteria: Fish IBI=39 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates fairly good habitat. Stream is meandering in some areas and extensively channelized in others Channel bends and woody debris provide some diversity of habitat and structure. Relatively good diversity of fish and good numbers of fish including good channel catfish population. Fish community is threatened by channelization impacts and sediment.

For the 1996 report: Used data from one biocriteria site (same location as previous stream use assessment site) to update use support determination. The biocriteria habitat and fish survey results were consistent with previous stream assessment results.

For the 1998 report, used a review of the field sheet from the October 1991 DNR stream use assessment approx. 10 miles S of Harlan, and results of the September 1994 DNR biocriteria sampling at the same location, to continue to assess the support of the Class B(LR) aquatic life use as FST due to (1) presence of a relatively diverse fish community for streams of the Loess Hills and Rolling Prairies subcoregion (11 species/4 families in 1991 & 11 species/3 families in 1994), (2) presence of all, or nearly all, of the expected fish taxa for streams in this subcoregion (7 of 7 in 1991 & 6 of 7 in 1994), and relatively good habitat quality in the vicinity of the biological assessments. Condition of the fish community and aquatic habitat at the site assessed suggests full support of the Class B(LR) uses. Extensive channelization in other reaches of this stream, however, continue to present a threat to the continued support of these uses. Excessive levels of sediment in the channel also a concern.

For the 2000 report, the assessment was based on data collected in 1994 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

Only the Fish-IBI was calculated for this assessment. The F-IBI score was 39 (fair). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI score with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Southern Iowa River Basins

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Platte River Subbasin

ONE HUNDRED AND TWO R, W BR -- mouth to headwaters

Waterbody ID No.: IA 05-PLA-0040

Subsegment No.: 1 Subsegment Description: W. Fk. 102 Rvr. to M. Br. 102 Rvr., Taylor Co.

Subsegment Length: 21 miles

ASSESSMENT COMMENTS: Aug 1990 SUA: habscore/fshscore=25/12 (shock); 1995 Biocriteria: Fish IBI= 27(fair), BM-IBI= 45 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Stream assess. form indicates fairly good habitat for SW Iowa streams. Coarse substrate and channel bends enhance habitat. Frequent stream bank erosion noted and fine substrates are dominant. Good population of channel catfish and habitat to support maintenance of pop.

For 1996 report: Used data from one biocriteria site in Taylor Co. to update use support determination. Fish and habitat metrics from stream use assessment protocol were applied to the data. Biocriteria data indicate the stream is heavily impacted by sediment. Very wide, shallow, and deeply incised channel. Fish diversity was reasonably good. Many yoy channel catfish observed, but no adults suggesting habitat is not suitable during low flow periods. I.E. partial use support was assigned.

For the 1998 report, continue to use the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=PS). This assessment is based primarily on the results of the October 1995 DNR biocriteria sampling. Despite a relatively diverse fish population (12 spp), the absence of adult game fish at low flows suggest that the Class B(WW) use is not fully supported. This reach of stream may be more appropriately designated for Class B(LR) aquatic life uses.

HONEY CR -- mouth-Taylor to headwaters

Waterbody ID No.: IA 05-PLA-0100

Subsegment No.: 0 Subsegment Description: IA-MO lin to trib S14,T69N,R32W TaylorCo

Subsegment Length: 23 miles

ASSESSMENT COMMENTS: Aug 1990 SUA: habscore/fshscore=17/8 (seine, 5 spp., 1998 Biocriteria: Fish IBI= 48(fair), BM-IBI= 63(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream use support assessment not possible because of active regulation of stream by beavers during the August 1990 DNR stream use assessment. Accurate assessment not possible. Not assessed for the 1996 or 1998 reports.

Rivers and Streams: Southern Iowa River Basins

Tarkio River Subbasin

W TARKIO CR

-- mouth to headwaters

Waterbody ID No.: IA 05-TAR-0020

Subsegment No.: 0

Subsegment Description: mouth to trib S9,T69N,R38W Page Co.

Subsegment Length: 18 miles

ASSESSMENT COMMENTS: Habscrs/fshscrs=1991 SAU: 20/13 (shock); 1995 Biocriteria: Fish IBI=30 (fair), BM-IBI= 39(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994: Stream assess. form indicates generally fair habitat. Old channeliz. and pasture impacts evident. Pools and riffles are formed in hardpan, some gravel and wood provide diversity of substrates. Fairly diverse fish community of minnow, sucker, and catfish species. Fish community is threatened by channeliz. impacts on habitat and probably by flow extremes.

For 1996: Biocriteria data indicate fairly poor habitat and low diversity of fish.

For the 1998 report, used a review of the field sheet from the September 1991 DNR stream use assessment, and a review of results from the October 1995 DNR biocriteria sampling, to continue to assess support of the Class B(LR) aquatic life uses as PS. Results of the September 1991 stream use assessment suggest a relatively diverse fish community (13 species from 4 families) for streams in the Loess Hills and Rolling Prairies (47e) subecoregion that contained nearly all (6 of 7) of the expected fish taxa for streams in this subecoregion. Results of the 1995 biocriteria sampling, however, show only about half the number of species found in 1991 (7 species from 2 families) with 4 of 7 of the expected fish taxa present. Follow-up monitoring is needed to determine the status of the aquatic communities and habitats of this stream and to determine the degree to which the Class B(LR) uses may be impaired.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 30 (fair) and the BM-IBI score was 39 (fair). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Western Iowa River Basins

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Boyer River Subbasin

BOYER R

-- Willow Cr. to East Boyer R.

Waterbody ID No.: IA 06-BOY-0020

Subsegment No.: 0

Subsegment Description: Willow Cr to East Boyer R, Crawford Co.

Subsegment Length: 46 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR quarterly water quality monitoring near Missouri Valley in FY96 and FY97. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report (lower reaches of Boyer R. not assessed as part of fixed station WQ monitoring nor as part of DNR stream use assessments conducted from 1990-1995).

For 1996 report, used knowledge of extensive channelization in lower reaches of Boyer River to assess the B(WW) aquatic life uses as PS due to channelization-related habitat modifications.

For 1998 report, changes the assessment of support of the Class B(WW) uses from PS to FST due to results from the DNR quarterly WQ monitoring station E of Missouri Valley: no violations of either toxic or conventional contaminants occurred in the eight samples collected over the October 95 to July 97 period. This assessment was developed without the benefit of information on the status of the aquatic communities in this reach of the Boyer River. Additional monitoring is needed to determine the status of the aquatic communities and habitats of this reach of river.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: The assessment of support of the Class B(WW) uses was based on results of water quality monitoring during the 1996-1997 biennial period at the DNR quarterly monitoring station 2 miles east of Missouri Valley (station 822304). For the 1998 report, the Class B(WW) aquatic life uses were assessed as "fully supported" but "threatened" due to historical impacts of extensive channelization and other impacts to the riparian corridor of the lower Boyer River (see above). This assessment of "threatened," however, was strictly a "best professional judgement" and was not supported by field assessments of either habitat or the biological communities. Until such assessments are conducted, the assessment of support of the Class B(WW) uses will be based only on results of the available information on chemical water quality monitoring and the comparisons of these results to the Iowa Water Quality Standards. Thus, the assessment of support of the Class B(WW) uses was changed from "fully supported / threatened" to "fully supporting" for the 2000 report. This assessment was based on results of quarterly monitoring. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Missouri Valley station began in October 1999. Fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Western Iowa River Basins

Boyer River Subbasin

BOYER R

-- East Boyer R. to headwaters

Waterbody ID No.: IA 06-BOY-0030

Subsegment No.: 1

Subsegment Description: E Boyer to Lime Cr nr Wall Lake, Sac Co

Subsegment Length: 57 miles

ASSESSMENT COMMENTS: Assessment is based on results of two October 1995 DNR stream use assessments. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996 report, used results of two DNR stream use assessments to assess support of the Class B(WW) aquatic life uses as PS due to (1) extensive channelization of entire reach, (2) habitat scores (22 and 23) and fish scores (11 and 12) marginal for a relatively large stream, (3) notes on field sheets referring to extensive channelization. Stream assessments show that this reach of the Boyer R. definitely supports a fish community, but habitat diversity is much reduced over a more meandered condition.

For the 1998 report, upgraded the assessment of support of the Class B(WW) aquatic life uses from PS to FST due to a review of field sheets from the October 1995 DNR stream use assessments. Assessments at both locations showed relatively diverse fish communities (14 spp, 3 fams and 9 spp, 4 fams) that contained the more than expected numbers of species/ genera typical of Class B(LR) streams in this region, and game fish (channel catfish) were captured at both locations. Thus, despite the extensive channelization and other alterations to the stream corridor and aquatic habitats, this segment of the Boyer River supports the expected fish community and thus supports the Class B(WW) uses. The primary threats to the continued support of the Class B(WW) uses are the extensive channelization, removal of riparian vegetation (primarily trees), and resultant stream bank erosion that degrades instream aquatic habitats.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported / threatened." The fish consumption uses remain "not assessed." EXPLANATION: The assessment of support of the Class B(WW) uses remains based on the biological and habitat information from the two October 1995 DNR stream use assessments conducted on this reach of the Boyer River (see assessment for the 1998 report above). A review of the field sheets from the October 1995 DNR stream use assessments near Deloit and at the Sac/Crawford county line shows (1) presence of a relatively diverse fish community for streams in the Loess Hills and Rolling Prairies (47e) subcoregion (14 species from 4 families and 9 species from 4 families), (2) presence of nearly all the expected fish taxa (6 of 7) for streams in this subcoregion at both assessment sites, and (3) presence of the expected game fish species (channel catfish) at both assessment sites. According to DNR's assessment methodology for Section 305(b) reporting, these results suggest that the Class B(WW) aquatic life use are "fully supported / threatened." The fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this reach of river.

Rivers and Streams: Western Iowa River Basins

Boyer River Subbasin

BOYER R

-- East Boyer R. to headwaters

Waterbody ID No.: IA 06-BOY-0030

Subsegment No.: 2

Subsegment Description: Lime Cr @ Wall L to trib S33,T88N,R37W

Subsegment Length: 57 miles

ASSESSMENT COMMENTS: Assessment is based on results of an October 1995 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report, used results of the October 1995 DNR stream use assessment to assess support of the Class B(WW) aquatic life uses as FST due to (1) habitat score (24) better than the overall median score (22) for DNR stream use assessments, (2) fish score (13) better than the 75th percentile score for stream assessments made with electrofishers, (3) presence of a meandered stream channel with relatively diverse aquatic habitats, and (4) very diverse fish community (19 species) for western Iowa streams. Continued support of aquatic life uses is threatened by excessive pasturing of the riparian zone and by excessive siltation due to row crop activities in the watershed.

For the 1998 report, continued to use the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST).

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses remain assessed as "fully supported / threatened." The fish consumption uses remain "not assessed." EXPLANATION: The assessment of support of the Class B(WW) uses remains based on the biological and habitat information from the October 1995 DNR stream use assessment (see assessment for the 1998 report above). A review of the field sheet from the October 1995 DNR stream use assessment conducted approximately 5 miles WNW of Lake View shows (1) presence of a relatively diverse fish community for streams in the Des Moines Lobe (47b) subcoregion (19 species from 4 families), (2) presence of a majority of the expected fish taxa (7 of 11) for streams in this subcoregion, and (3) presence of two of the expected game fish species (northern pike and channel catfish). According to DNR's assessment methodology for Section 305(b) reporting, these results suggest that the Class B(WW) aquatic life use are "fully supported / threatened." (Note: The upper reaches of the Boyer River lie in the "fuzzy boundary" region between the Northwest Iowa Loess Prairies (47a) and the Des Moines Lobe (47b) subcoregions. The fish community of the upper Boyer shows affinities to both subcoregions; Section 305(b) scoring for the October 1995 assessment for either subcoregion does not affect the assessment result of "fully supported / threatened" for this stream reach.) The fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this reach of river.

Rivers and Streams: Western Iowa River Basins

Boyer River Subbasin**BOYER R**

-- East Boyer R. to headwaters

Waterbody ID No.: IA 06-BOY-0030

Subsegment No.: 3

Subsegment Description: trib S33,T88N,R37W to trib S5,T89N,R37W

Subsegment Length: 57 miles

ASSESSMENT COMMENTS: Assessment is based on results of an October 1995 DNR stream use assessment. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report, used results of two DNR stream use assessments to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a meandered stream channel, (2) existence of a relatively diverse fish community (16 species from 7 families) for western Iowa streams. Continued support of the aquatic life uses is threatened by excessive siltation from agricultural activities in the watershed.

For the 1998 report, continued to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST). A review of the field sheet from the October 1995 DNR stream use assessments suggests that the primary threats to the continued support of the Class B(LR) uses are frequent channelization, pasturing of the riparian corridor, and the resultant destabilization and erosion of stream banks.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." EXPLANATION: The assessment of support of the Class B(LR) uses remains based on the biological and habitat information from the October 1995 DNR stream use assessment conducted at Reiff County Park (Sac County) (see assessment for the 1998 report above). A review of the field sheets from the October 1995 DNR stream use assessment shows (1) presence of a relatively diverse fish community for streams in the Des Moines Lobe (47b) subcoregion (16 species from 7 families) and (2) presence of a majority of the expected fish taxa (7 of 11) for streams in this subcoregion. According to DNR's assessment methodology for Section 305(b) reporting, these results suggest that the Class B(LR) aquatic life use are "fully supported / threatened." (Note: The upper reaches of the Boyer River lie in the "fuzzy boundary" region between the Northwest Iowa Loess Prairies (47a) and the Des Moines Lobe (47b) subcoregions. The fish community of the upper Boyer shows affinities to those of both subcoregions, and Section 305(b) scoring for the October 1995 assessment for either subcoregion does not affect the assessment result of "fully supported / threatened" for this stream reach.)

BIG CR

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 06-BOY-0053

Subsegment No.: 0

Subsegment Description: mouth (NW 1/4, S27, T84N, R39W, Crawford Co.) to headwaters

Subsegment Length: 11 miles

ASSESSMENT COMMENTS: 1998 Biocriteria: Fish IBI= 41 (fair), BM-IBI= 66 (good).SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports due to lack of water quality information.

2000 report: The assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 41 (fair), and the BM-IBI score was 66 (good). The aquatic life use support status was assessed as fully supporting (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Western Iowa River Basins

Boyer River Subbasin

OTTER CR

-- mouth-Crawford to headwaters

Waterbody ID No.: IA 06-BOY-0055

Subsegment No.: 0

Subsegment Description: mouth to E Otter Cr, Crawford Co.

Subsegment Length: 7.3 miles

ASSESSMENT COMMENTS: July 1992 SUA: habscore=21, fshscore=9 (seine, 7 spp.); 1998 Biocriteria: Fish IBI= 56(good), BM-IBI= 58(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Lots of debris (rocks and junk) and muck in stream. Shortnose gar (15" & 20") collected by seine. Channelization impacts are evident.

For the 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (PS).

For the 1998 report, upgraded the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to a review of the field sheet from the July 1992 DNR stream use assessment that suggest that the fish community of this stream contains the species and genera typical of Class B(LR) streams in this region. Thus, despite the frequent habitat alterations from channelization, removal of riparian vegetation (primarily trees), and stream bank erosion, this composition of the fish community of this stream suggest that the Class B(LR) uses are fully supported. Additional monitoring is needed to better determine the status of the aquatic communities and habitats.

For the 2000 report, the assessment was based on data collected in 1998 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 56 (good) and the BM-IBI score was 58 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Western Iowa River Basins

Big Sioux River Subbasin**BIG SIOUX R**

-- mouth to Rock River

Waterbody ID No.: IA 06-BSR-0010

Subsegment No.: 0

Subsegment Description: mouth to Rock River (Sioux Co.)

Subsegment Length: 82 miles

ASSESSMENT COMMENTS: Assessment is based on results of (1) water quality monitoring conducted by South Dakota near Richland and Alcester, SD. and (2) fish tissue (RAFT) monitoring in 1996. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Over 50% of the approx 12 samples analyzed exceed the Class A WQC for fecal coliforms; thus, assess Class A uses as PS. No violations of Class B WQC; thus suggest FS of Class B uses. Assess as FST due to known threats from agriculture. 1994 Fishing guide notes that BSR supports fishery for channel catfish. In the 1992 305(b) report, Class A uses were assessed as FST and Class B uses were assessed as PS: this must have been a mistake: STORET retrievals show, even with correction for high flows, approx 45% of the samples exceeded the Class A WQC (= NS). Pattern of highest levels to occur in June, July and August is repeated at all SDAK stations for the years 1990 through 1993.

For 1996 report, assessed support of the Class A primary body contact recreation uses as PS due to relatively high levels of fecal coliform bacteria (4 of 12 samples collected in this reach during the 1994-1995 recreational seasons exceeded the Class A WQ criterion = 33% violations). No violations of Class B aquatic life WQ criteria. Levels of total dissolved solids tend to be high and tend to exceed general class criterion of 750 mg/l. No known source (other than natural sources) for these high levels of TDS.

For the 1998 report, had no violations of Class B(WW) WQ criteria for either toxic or conventional contaminants in samples collected monthly at the Richland and Alcester stations during the Oct 95 to Sep 97 period. Approximately one third of the samples exceeded the general class criterion of 750 mg/l for total dissolved solids. Based on conversations with WQ staff from other Region VII states, attribute these violations to naturally occurring conditions. Based on assessment methods recommended in U.S. EPA guidelines for preparation of the 1998 section 305(b) reports, the Class A primary contact recreation uses were assessed as PS due to (1) geometric mean levels of fecal coliform bacteria at both stations (360/100 ml at Richland; 244/100 ml at Alcester) that exceeded the Iowa WQ criterion of 200 organisms/100 ml and (2) 20% of the five non-flow affected samples at each site exceeded 400 organisms/100 ml. Because data from too few non-flow affected samples were available (i.e., less than 10 samples), support of the Class A primary contact recreation uses was assessed as PS. Monitoring for the 1996 U.S. EPA/DNR Regional Ambient Fish Tissue (RAFT) monitoring prog. showed all contams < 1/2 FDA action levels in carp (=FS).

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "partially supported." The Class B(WW) aquatic life were assessed as "fully supported." Fish consumption uses were assessed as "fully supported." EXPLANATION: The assessments of support of the Class A and Class B(WW) beneficial uses are based on results of monthly water quality monitoring conducted from November 1997 through September 1998 by the state of South Dakota near the towns of Richland and Alcester, South Dakota. The Class A uses were assessed as "partially supported" Results of monitoring in summer 1998 showed that the geometric mean levels of indicator bacteria (fecal coliforms) in five samples from each station (388 orgs/100ml at Richland and 327 orgs/100 ml at Alcester) were greater than the Iowa Class A water quality criterion of 200 orgs/100ml. Two of the five samples from the Richland station (40%) exceeded the U.S. EPA-recommended single-sample maximum value of 400 orgs/100 ml; one of 5 samples from the Alcester station (20%) exceeded this level. According to U.S. EPA guidelines for Section 305(b) reporting, if the geometric mean level of fecal coliforms exceeds 200 orgs/100 ml, the primary contact recreation uses are "not supported" (see pgs 3-33 to 3-35 of U.S. EPA 1997b). Due, however, to the lack of sufficient data points for developing a "monitored" assessment (according to DNR's 305(b) assessment methodology, "monitored" assessments require at least 10 non-runoff-affected samples), the Class A uses of this river reach were assessed (evaluated) as "partially supported." Regarding support of the Class B(WW) aquatic life uses, results of monitoring at Richland and Alcester showed that one of the combined 20 samples collected from November 1997 through September 1998 (5%) violated the state Class A and Class B(WW) criterion for pH (9.1 units on July 15, 1998). According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page.3-17), the percentage of violations for pH in this stream reach (5%) does not suggest a water quality impairment (the EPA guidelines allow up to 10% violations of these conventional parameters before impairment of water quality is indicated). None of the combined 23 samples analyzed contained levels of ammonia-nitrogen above state chronic criteria for Class B(WW) waters. Thus, the Class B(WW) aquatic life uses were assessed as "fully supported." Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring upriver from Hawarden (station 008316) in 1996 that showed levels of all contaminants in the composite sample of carp fillets were less than 1/2 of the respective FDA action levels.

Rivers and Streams: Western Iowa River Basins

Big Sioux River Subbasin**BIG SIOUX R**

-- Rock R. to IA-MN state line

Waterbody ID No.: IA 06-BSR-0020

Subsegment No.: 0

Subsegment Description: Rock R. to IA-MN state line

Subsegment Length: 54 miles

ASSESSMENT COMMENTS:

Assessment is based on results of (1) water quality monitoring by South Dakota near Hudson and Canton, SD. and (2) fish tissue (RAFT) monitoring in 1996. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Over 50% of the approx 12 samples analyzed exceeded the Class A WQC for fecal coliforms; thus, assess Class A uses as PS. No violations of Class B WQC; thus suggest FS of Class B uses. Assess Class B uses as FST due to known threats from agriculture; also FST due to fishery for CCAT noted in 1994 DNR fishing guide. For 1992 report, Class A uses were assessed as FST, and Class B uses were assessed as PS: this must have been a mistake: STORET retrievals made for the 1992 report show, even with correction for high flows, that approx 45% of the samples exceeded the Class A WQC (=NS). Pattern of highest levels of fecals to occur in June, July, and August is repeated at all SDAK station in the years 1990 through 1993.

For the 1996 report, used results of water quality monitoring at Hudson and Canton to assess support of Class A (primary contact uses) as PS due to high levels of fecal coliform bacteria; i.e., 5 of 8 samples collected during recreational seasons of 1994 and 1995 exceeded the Class A WQ criterion. Class B(WW) aquatic life uses were assessed as FST due to lack of violations of Class B(WW) water quality criteria. Levels of total dissolved solids tend to be high and tend to exceed the 750 mg/l WQ criterion for general use waters (34 of 70 samples (49%) exceeded the general use criterion). All monitoring stations on the Big Sioux R. report similar levels of TDS; sources believed to be natural.

For the 1998 report, again used results of WQ monitoring at Hudson and Canton, SD, to assess support of Class A primary contact uses as PS due to approximately 40% of the samples coll. during summers of 1996 and 1997 that exceeded the 200 organisms/ 100 ml Iowa WQ criterion at each site. Too few non flow-affected samples were collected at each site (5), however, to make a "monitored" Section 305(b) assessment. Thus, made the "evaluated" assessment of PS. Two Class B(WW) WQ criteria were exceeded in the approximately 48 samples collected at the two stations: the sample collected on June 24, 1997 at Hudson contained 2.4 mg/l of dissolved oxygen and thus violated the Iowa WQ criterion of 5.0 mg/l, and a sample from Hudson on Nov. 1, 95 contained 0.33 ug/l of mercury, thus exceeding the chronic WQ criterion of 0.05 ug/l. Neither of these violations suggests WQ impairment according to U.S. EPA guidelines for Section 305(b) reporting. Thus, assess Class B(WW) aquatic life uses at FST. Approx. 50% samples > 750 mg/l TDS; sources believed natural.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "fully supported." The Class B(WW) aquatic life were assessed as "fully supported," and fish consumption uses were assessed as "fully supported." EXPLANATION: The assessments of support of the Class A and Class B(WW) beneficial uses are based on results of monthly water quality monitoring conducted from November 1997 through September 1998 by the state of South Dakota near the towns of Hudson and Canton, South Dakota. The Class A uses were assessed as "fully supported" Results of monitoring in summer 1998 showed that the geometric mean levels of indicator bacteria (fecal coliforms) in five samples from each station (194 orgs/100ml at Hudson and 57 orgs/100 ml at Canton) were less than the Iowa Class A water quality criterion of 200 orgs/100ml. No samples from either station exceeded the U.S. EPA-recommended single-sample maximum value of 400 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting, if the geometric mean levels of fecal coliforms are less than 200 orgs/100 ml, and if less than 10% of samples exceeds the EPA-recommended single sample maximum value of 400 orgs/100ml, the primary contact recreation uses are "fully supported" (see pgs 3-33 to 3-35 of U.S. EPA 1997b). Due, however, to the lack of sufficient data points for developing a "monitored" assessment (according to DNR's 305(b) assessment methodology, "monitored" assessments require at least 10 non-runoff-affected samples), the Class A uses of this river reach were considered "evaluated: as "fully supported." Additional data for indicator bacteria are needed to improve the confidence level for this assessment. Regarding support of the Class B(WW) aquatic life uses, results of monitoring at Hudson and Canton showed no violations of Iowa Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen in the approximately 20 samples collected from November 1997 through September 1998 at these stations. According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), these results suggest "full support" of the aquatic life uses. Fish consumption uses were assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring upriver from the confluence with the Rock River (station 009836) in 1996 that showed levels of all contaminants in the composite sample of carp filets were less than 1/2 of the respective FDA action levels.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Western Iowa River Basins

Big Sioux River Subbasin

SIXMILE CR

-- mouth to headwaters

Waterbody ID No.: IA 06-BSR-0029

Subsegment No.: 0

Subsegment Description: mouth to trib S19,T95N,R46W Sioux Co.

Subsegment Length: 21 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of a fish kill in June 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994: Stream assessment form indicates frequent areas of pasture use and channelization leading to habitat degradation. Frequent stream bank erosion noted. Low diversity of fish observed.

For 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report.

For the 1998 report, continued to use assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=PS). Follow-up monitoring is needed to determine the status of the aquatic communities and habitats and to determine to what degree the Class B(LR) uses may be impaired.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "partially supported." EXPLANATION: The assessment of support of the Class B(LR) uses developed for the previous (1998) report ("partially supported"; see assessment for the 1998 report above) was based on results from two DNR stream use assessment conducted in 1991. The results from these assessments are now considered too old (greater than five years) to be useful for developing water quality assessments of current conditions. A fish kill occurred on Sixmile Creek on June 15, 1998; no specific location information is available. This kill was attributed to cattle manure. An estimated 1,150 fish were killed (an previous fish kill on Sixmile Creek occurred near Hawarden on November 6, 1993; this kill was attributed to the Farmers Coop Society in Sioux Center). According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the assessment of support of the Class B(LR) aquatic life uses of this stream was assessed as "partially supported" due to the June 1998 fish kill.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Western Iowa River Basins

Big Sioux River Subbasin

ROCK R

-- Little Rock R. to IA-MN line

Waterbody ID No.: IA 06-BSR-0040

Subsegment No.: 1

Subsegment Description: Little Rock R. to Kanranzi Cr (Lyon Co.)

Subsegment Length: 27 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring in 1994 at Rock Rapids. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Not assessed
Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Stream assess. form indicates better than average habitat. Isolated channel alterations from pasture use noted. Several yoy smallmouth bass as well as adults observed.

For 1996 report, used assessment of support of the Class B(WW) aquatic life uses developed for the 1994 report (=FST).

For the 1998 report, continued to use the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST). Because the field work upon which this assessment was based is now more than five years old, the assessment category was changed from "monitored" to "evaluated" as per recommendations in U.S. EPA guidelines for preparation of Section 305(b) reports. Also used results of fish contaminant monitoring conducted in 1994 at Rock Rapids as part of the U.S. EPA/DNR Regional Ambient Fish Tissue (RAFT) monitoring program to assess support of fish consumption uses as FS: levels of all contaminants in samples of bottom feeder (channel catfish) and predator fish (northern pike) were below 1/2 the respective FDA action levels. Additional biological monitoring is needed to update this assessment.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life were considered "not assessed." The fish consumption uses remain assessed as "fully supported." EXPLANATION: Due to the lack of recent data from either chemical or biological monitoring for this river reach, the assessment of support of the Class B(WW) uses was changed from "fully supported / threatened" to "not assessed." Previous assessments of the Class B(WW) uses were based primarily on results of DNR stream use assessments conducted in the early 1990s (see above). Results of these stream assessments, however, are now considered too old (greater than five years) to be useful for assessing current water quality conditions. Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring near Rock Rapids in early fall 1994 (see assessment for the 1998 report above).

Rivers and Streams: Western Iowa River Basins

Big Sioux River Subbasin

LITTLE ROCK R

-- mouth to IA-MN state line

Waterbody ID No.: IA 06-BSR-0060

Subsegment No.: 0

Subsegment Description: mouth (Lyon Co.) to the IA-MN state line

Subsegment Length: 46 miles

ASSESSMENT COMMENTS: 1990 SUA: habscore/fshscore=21/13 (seine). 1996 Biocriteria: Fish IBI=40 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assess. form indicates nice pools & riffles. Isol. pasture impacts evident. Lacking habitat during low flow periods. Very productive and relatively diverse fish community.

For the 1996 report: Used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST).

For the 1998 report: Used results of the Sept. 1996 DNR biocriteria sampling approximately 1.5 mi E of George to assess support of the Class B(LR) aquatic life uses as FS due to (1) presence of a relatively diverse fish community of 17 species from 5 families, (2) presence of nearly all of the expected fish taxa (8 of 9) for streams in the Northwest Iowa Loess Prairies subecoregion, and (3) lack of violations of Class B(LR) WQ criteria in the sample collected during biocriteria sampling.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

Only the Fish-IBI was calculated for this assessment. The F-IBI score was 40 (fair). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI score with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Western Iowa River Basins

Floyd River Subbasin

FLOYD R

-- mouth to W. Br. Floyd R

Waterbody ID No.: IA 06-FLO-0010

Subsegment No.: 0

Subsegment Description: mouth to W. Br. Floyd R., Plymouth Co.

Subsegment Length: 22 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR monthly water quality monitoring near James during FY98 and FY99. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Stream assessment form indicates fairly good habitat. Snag habitat and relatively deep pools were observed. Channelization is fairly common. For 1992 report, used WQ monitoring data and info from stream use designation surveys on Sept. 5, 1990 to assess support of aquatic life uses as FST. Had 1 of 36 samples exceed acute criterion for TRC. DNR staff used BPJ to assess as PS due to siltation and nutrients from agricultural NPS.

For 1994 report, had no violations of Class B(WW) WQC; but assess as PS due to known impairments due to habitat alterations related to hydrological modification (channelization) and due to flow alterations related to channelization, and due to siltation related to agriculture.

For 1996 report, had no violations of Class B(WW) water quality criteria to protect Class B(WW) uses in the 24 monthly samples collected for the DNR fixed station monitoring network. Used assessment of support of the Class B(WW) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, changed the assessment of support of the Class B(WW) aquatic life uses from PS to FST due to a review of the field sheet from the September 1990 DNR stream use assessment conducted near Merrill. The fish community at this location contained most of the expected species/genera for streams in this region (47e) including channel catfish (note on field sheet: "relatively good habitat for channel catfish; relatively deep pools; fair number of snags"). Thus, composition of the fish community, as well as results of monthly water quality monitoring near James, suggest that the Class B(WW) uses are fully supported. The biological data used to develop this assessment are more than 5 years old. Additional monitoring is needed to determine the status of the aquatic communities and habitats and to provide information for an updated and more accurate assessment of support of the Class B(WW) uses.

For the 2000 report: SUMMARY: Assessed support of the Class B(WW) aquatic life uses as "fully supported." Fish consumption remain "not assessed." EXPLANATION: The assessment of support of the Class B(WW) uses was based on results of water quality monitoring during the 1998-1999 biennial period at the DNR monthly monitoring station on the Floyd River near James (station 950110). Results of this monitoring show no violations of Class B(WW) criteria for pH, dissolved oxygen, or ammonia nitrogen in the 23 samples analyzed during the biennial period; no violations of Class B(WW) chronic criteria for toxic metals occurred in the two samples analyzed during the biennial period. Thus, the Class B(WW) aquatic life uses were assessed as "fully supported." Although not designated for Class C (drinking water) uses, this river reach tends to have high levels of nitrate, with levels in 14 of the 23 samples collected during the biennial period exceeding the 10 mg/l MCL (mean=12.1 mg/l; max.=17.0 mg/l; SE=0.7). Levels of total phosphorus were also relatively high, with a mean level of 0.48 mg/l (SE=0.03; N=23) for the 1998-1999 biennial period. The results of the DNR stream use assessments conducted in September 1990-upon which previous assessments were partially based (see above)-are now considered too old (greater than five years) to be useful for assessing current water quality conditions. Fish consumption uses were not assessed due to lack of fish tissue monitoring for this river reach.

Rivers and Streams: Western Iowa River Basins

Floyd River Subbasin

FLOYD R

-- W. Br. Floyd R. to headwaters

Waterbody ID No.: IA 06-FLO-0020

Subsegment No.: 2

Subsegment Description: City of Alton to headwaters

Subsegment Length: 69 miles

ASSESSMENT COMMENTS: Assessment is based on (1) results of 1995 DNR/UHL biocriteria sampling and (2) occurrence of fish kills in May 1997 and September 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Stream assessment form indicates little diversity of habitat. Lacking habitat to sustain aquatic community during low flow periods. Low diversity of fish species found.

For 1996: Divided the B(LR) segment into two equal subsegments. Used the 1990 stream assessment for the dwnstr. subsegment and data from biocriteria sampling location for upstr. subsegment. Fish and habitat metrics from 1994 stream assessment protocol were applied to the biocriteria data to make assessment.

For 1998: Added one fish kill that was reported 5/17/97; 5,558 fish killed as a result of feedlot runoff. A review of results from the September 1995 DNR biocriteria sampling shows (1) presence of a relatively diverse fish community (14 species from 5 families) for streams in the Northwest Iowa Loess Prairies subecoregion and (2) presence of nearly all the expected fish taxa (8 of 9) for streams in this subregion. Thus, these results support the assessment of support of the Class B(LR) aquatic life uses as FST. Threats remain from feedlot runoff and fish kills.

For 2000: The Class B(LR) aquatic life uses were assessed as "not supported." A fish kill occurred on the Floyd River at, and 15 miles downstream from, Sheldon in Sioux County on September 24, 1998. Contents of a catchment basin surrounding a tank with 28% nitrogen were pumped into a storm sewer following a rainfall event. Toxic materials were discharged from the storm sewer to a drainage way one-quarter mile from the Floyd River. An estimated 408,000 fish were killed over the 15 mile reach affected by the kill. Due to the occurrence of two kills in the 1994-99 assessment period, the Class B(LR) aquatic life uses of this river reach were assessed as PS. No additional information exists for assessing the water quality of this waterbody segment. Restitution for both kills was requested and received by DNR (1997 kill: Northwest Iowa Cooperative; 1998 kill: Midwest Farmer's Cooperative). The occurrence of this kill, and an additional fish kill at Sheldon in May 1997 (see assessment for the 1998 report above) suggests that the Class B(LR) aquatic life uses are "not supported." According to DNR's assessment methodology for Section 305(b) reporting, occurrence of two or more pollution-caused kills within the most recent three-year period (1997-1999) indicates that the aquatic life uses are "not supported." Thus, the assessment of support of the Class B(LR) aquatic life uses for this stream reach were changed from "fully supported / threatened" to "not supported" due to reoccurring fish kills.

The 1995 DNR/UHL biocriteria sampling site was located upstream from the fish kill affected stream segment approximately 1 mile north of Sheldon. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum). The F-IBI score was 36 (fair), and the BM-IBI score was 68 (good). The aquatic life use support status for this sampling reach of stream was assessed as fully supporting / threatened (=FS/T), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

The final use support determination was primarily based on the more recent reports (1997, 1998) of fish kills which affected a larger proportion of the stream segment than was represented by the 1995 biocriteria sampling site. The biocriteria sampling results of 1995 indicate the stream can attain full support of aquatic life uses if pollution impacts can be prevented.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Western Iowa River Basins

Floyd River Subbasin

FLOYD R, W BR

— Orange City Sl. to headwaters

Waterbody ID No.: IA 06-FLO-0040

Subsegment No.: 0

Subsegment Description: Orange City Slough to trib S18,T96N,R44W, Sioux Co.

Subsegment Length: 27 miles

ASSESSMENT COMMENTS: Assessment is based on occurrence of a fish kill in July 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Stream assessment form indicates poor habitat, inadequate for supporting aquatic community during low flow periods. Crayfish and black bullheads only aquatic organisms noted.*

For 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, upgraded the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to a review of the field sheet from the September 1990 DNR stream use assessment which shows that the fish community of 9 species and 3 families contains nearly all species/genera expected for a Class B(LR) stream in this region. Thus, the composition of the fish community strongly suggests that the Class B(LR) uses are fully supported. The field sheet does not indicate threats to the continued support of these uses other than isolated areas of channel alterations and streambank erosion. The data used to develop this assessment are more than 5 years old; thus, the 305(b) assessment category = "evaluated." Additional monitoring is needed to determine the status of the aquatic communities and habitats. [*Note: the statement from the 1994 assessment that "crayfish and black bullheads only aquatic organisms noted" was incorrect. The fish species captured during that assessment were recorded in field notes for collection JRO-35-1990.] The data upon which this assessment is based are more than 5 years old; thus, the 305(b) assessment category = "evaluated."

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "partially supported." EXPLANATION: The assessment of support of the Class B(LR) uses developed for the previous (1998) report ("fully supported / threatened"; see above) was based primarily on results from a DNR stream use assessment conducted in 1990. The results from this assessment are now considered too old (greater than five years) to be useful for developing water quality assessments of current conditions. A fish kill occurred in the general use reach of the West Branch Floyd River on July 8, 1998. The kill occurred three miles east and 1 mile north of Hull in Sioux County. The kill proceeded downstream for approximately five miles into the upper reaches of the Class B(LR) portion of this stream. The kill was attributed to agricultural runoff from animal waste from a hog confinement operation; an estimated 7,900 fish were killed. According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period (1997-1999) indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the assessment of support of the Class B(LR) aquatic life uses was assessed as "partially supported" due to this July 1998 fish kill.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

LITTLE SIOUX R

-- Maple R. to Mill Cr @ Cherokee

Waterbody ID No.: IA 06-LSR-0020

Subsegment No.: 1

Subsegment Description: Maple R. to Big Cr. in Anthon (Woodbury)

Subsegment Length: 83 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR quarterly water quality monitoring in FY98 and FY99 northeast of Smithland in Woodbury County. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had no violations of Class B WQC at quarterly monitoring station. DNR staff used BPJ to assess reach as PS due to siltation and nutrients from agricultural NPS.

For 1994 report, used info from old quarterly station and assessed as PS due to habitat alterations resulting from channelization.

For 1996 report, used assessment of support of the Class B(WW) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, changed the assessment of support of the Class B(WW) aquatic life uses to "not assessed" due to (1) lack of recent water quality monitoring information (the most recent monitoring was conducted in August 1991) and (2) lack of biological information for this reach of river. Additional monitoring is needed to determine the status of the aquatic communities and habitats in this reach of river.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were assessed as "fully supported." The fish consumption uses remain "not assessed." EXPLANATION: The assessments of the Class B(WW) uses were based on results of monitoring during the 1998-1999 biennial period from the DNR quarterly station on the Little Sioux River northeast of Smithland in Woodbury County. Based on the lack of violations of Class B(WW) criteria for pH, dissolved oxygen, and ammonia in the eight samples analyzed during the biennial period, and due to the lack of violations of Class B(WW) chronic criteria for toxic metals in the two samples analyzed during this period, the aquatic life uses were assessed as "fully supported." This assessment was based on results of quarterly monitoring. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Smithland station began in October 1999. Fish consumption uses remain "not assessed" due to the lack of fish tissue monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

LITTLE SIOUX R

-- Maple R. to Mill Cr @ Cherokee

Waterbody ID No.: IA 06-LSR-0020

Subsegment No.: 2

Subsegment Description: Big Cr. at Anthon (Woodbury Co.) to Mill Cr (=Hwy 3, Cherokee Co.)

Subsegment Length: 83 miles

ASSESSMENT COMMENTS: Waterbody segment not assessed for the 2000 305(b) cycle.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Not assessed

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996 report, used results of fisheries surveys conducted for the 1989 Iowa Natural History Foray in Cherokee and O'Brien counties to assess support of the Class B(WW) aquatic life uses as FST due to (1) presence of moderate diversity of species and families at locations sampled, (2) presence of a meandered channel with relatively good habitat diversity, (3) presence of sport fish (channel catfish and freshwater drum), and (4) riparian zones with well-established vegetation.

For the 1998 report, continue to use the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST). A review of results of the 1989 DNR fish surveys and Raney Knob and Red Tail parks in southern Cherokee County shows that a majority of the fish taxa (7 of 9) expected for streams in the NW Iowa Loess Prairies subcoregion was present and the expected game fish species (channel catfish) was present. This assessment is considered "evaluated" (versus "monitored" due to the age of the data (i.e., > 5 years old). Additional monitoring is needed to update the assessment and to better define the status of the aquatic communities and habitats. Support of the fish consumption uses was assessed as FS due to results of fish contaminant monitoring conducted for the 1997 DNR/U.S. EPA "RAFT" program that showed levels of all contaminants less than 1/2 of FDA action levels in composite samples of carp filets.

For the 2000 report: **SUMMARY:** The Class B(WW) aquatic life uses are considered "not assessed." The fish consumption uses were assessed as "fully supported." **EXPLANATION:** The previous assessment of support of the Class B(WW) uses was based on results of two DNR fish surveys 1989 (see assessment for the 1998 report above). These data are now considered too old (greater than five years) for characterizing current water quality conditions. Thus, the support of the Class B(WW) aquatic life uses was changed from "fully supported / threatened" to "not assessed." Fish consumption uses were assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1998 near Washta (station 008713) that showed levels of all contaminants in the composite samples of whole-fish carp were less than 1/2 of the respective FDA action levels.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Western Iowa River Basins

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Little Sioux River Subbasin

LITTLE SIOUX R

-- Ocheyedon R. to IA-MN line

Waterbody ID No.: IA 06-LSR-0040

Subsegment No.: 1

Subsegment Description: Ocheyedon R (Spencer) to W.Fk.L. Sioux R

Subsegment Length: 53 miles

ASSESSMENT COMMENTS: SUAs: habcores/fshscrs: 1990: 22/10 (seine); 1996 Biocriteria: Fish IBI=57 (good), BM-IBI=69 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Coarse substrates and pool/riffle sequences fairly common. Bank erosion and habitat degradation by pasture use and channel-zation are major sources of impairment. Red shiners only abundant fish species.

For the 1996 report, used information gathered during DNR biocriteria sampling near Horseshoe Bend Park to upgrade assessment of support of the Class B(WW) aquatic life uses from PS to FST due to (1) presence of coarse substrates that form riffles, (2) presence of game fish (N. pike, ccat and walleye), and riparian areas that are generally in good shape regarding vegetation. Areas of overpasturing of riparian areas exist, and the continued support of the aquatic life uses are threatened by riparian grazing.

For the 1998 report, continue to use the assessment of support of the Class B(WW) aquatic life uses developed for the 1996 report (=FST). Results of the 1996 biocriteria sampling showed a relatively diverse fish community with 19 species from 7 families and the presence of a majority of the expected fish taxa for streams in the Des Moines Lobe subcoregion (7 of 11). Expected game fish species (e.g., channel catfish, northern pike, and walleye) present.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 57 (good) and the BM-IBI score was 69 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

LITTLE SIOUX R

-- Ocheyedan R. to IA-MN line

Waterbody ID No.: IA 06-LSR-0040

Subsegment No.: 2

Subsegment Description: W.Fk.L Sioux (Dickinson) to IA-MN line

Subsegment Length: 53 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR quarterly water quality monitoring near Milford in FY96 and FY97. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Pasture impacts evident. Fine substrates predominant.

For 1996 report, used information from DNR stream biocriteria sampling to change the assessment of support of the Class B(LR) aquatic life uses from PS (1994 report) to FST due to information suggesting relatively good quality aquatic habitats, lack of channelization impacts, presence of adult sport fish populations (walleye; northern pike), and presence of well-established riparian vegetation. Continued support of uses is threatened by overpasturing of riparian zone.

For the 1998 report, used results of DNR quarterly WQ monitoring 0.5 miles upstream from the Great Lakes Sanitary district to develop an assessment of support of the Class B(LR) aquatic life uses. Also used results of DNR biocriteria sampling at the Twin Forks Wildlife Area in 1996. Results of WQ monitoring show no violations of Class B(LR) WQ criteria for either conventional or toxic contaminants. In addition, results of biocriteria sampling suggest relatively good aquatic habitat and fish populations in this reach. Thus, assess support of the Class B(LR) aquatic life uses as FST. The biocriteria sampling showed a relatively diverse fish community of 22 species from 6 families; a majority of the expected fish taxa for the Des Moines Lobe subcoregion were present (6 of 11).

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "fully supported." EXPLANATION: The assessment of support of the Class B(LR) uses was based on results of quarterly monitoring during the 1996-1997 biennial period at the DNR station (920450) near Milford. This monitoring showed no violations of WQ criteria to protect the Class B(WW) aquatic life uses: no violations of Class B(WW) criteria for dissolved oxygen, pH, and ammonia-nitrogen occurred in the 8 samples collected during this monitoring period; no violations of Class B(WW) chronic criteria for toxic metals occurred in the one sample analyzed during this period. Thus, the Class B(LR) aquatic life uses were assessed as "fully supported." This assessment was based on results of quarterly water quality monitoring. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Milford station began in October 1999.

*Little Sioux River Subbasin***MAPLE R**

-- mouth to Odebolt Cr.

Waterbody ID No.: IA 06-LSR-0070

Subsegment No.: 0

Subsegment Description: mouth (Monona Co.) to Odebolt Cr at Ida Grove, Ida Co

Subsegment Length: 45 miles

ASSESSMENT COMMENTS:

Assessment is based on (1) a 1997 DNR/UHL bioassessment (Fish IBI= 39(fair), BM-IBI= 70(good)) and (2) an October 1995 DNR stream use assessment. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
 Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, reach was assessed only with BPJ of DNR field staff: reach was assessed as PS due to impacts from siltation and nutrients from agricultural NPS.

For 1994 report, used results from quarterly WQ monitoring station. No violations of Class B WQC were reported; thus, support of Class B uses should be FS. Known threats to support of uses from agricultural NPS, and known impacts of channelizat, esp in the lower portion of this waterbody, suggest that the support of aquatic life uses should be assessed as PS.

For 1996 report, used assessment of support of aquatic life uses developed for the 1994 report (PS) along with results of DNR stream use assessment conducted downstream from Ida Grove in Oct 1995. Results of stream assessment supports the previous assessment as PS due to (1) extensive channelization and (2) excessive stream bank erosion in reaches not yet channelized. Assessment found very little for pool habitat even in the areas that remain meandered. Fish community at sampling site contains the expected species, but numbers of individuals per species, especially for larger fish, was relatively low.

For the 1998 report, upgraded the assessment of support of the Class B(WW) uses as FST due to a review of the field sheet from the October 1995 DNR stream use assessment that shows a very diverse fish community for western Iowa (17 spp; 5 fams) that contains species expected for streams in this region plus game fish (channel catfish) that justify the Class B(WW) use designation. Thus despite threats to continued support, including extensive alterations of the channel, including channel straightening, removal of riparian vegetation (especially mature trees) and streambank erosion, the composition of the fish community suggests that the Class B(WW) aquatic life uses are fully supported. Results of the August 1997 DNR watershed bioassessment conducted 1/8th mile dstr from the Ida Grove WWTP supports the assessment of the Class B(WW) aquatic life uses as FST due to (1) presence a very diverse fish community for the Loess Hills and Rolling Prairies subcoregion, 14 spp, 5 fams), (2) presence of majority (4 of 7) of expected fish taxa for streams in the Loess Hills and Rolling Prairies subcoregion, (3) presence of the expected game fish species (channel catfish), and (4) lack of violations of Class B(WW) aquatic life criteria in the sample collected during the watershed bioassessment.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses are considered "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The assessment of support of the Class B(WW) uses developed for previous reports (see above) was based, in part, on results of DNR quarterly water quality monitoring near Mapleton (station 911040). Data from this station, however, were last collected from October 1991 through September 1993 and are thus considered too old (greater than five years) for characterizing current water quality conditions. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Mapleton station began in October 1999. Results from this monitoring will allow development of an updated assessment of support of beneficial uses for the 2002 report. The current assessment is based primarily on results from the August 1997 DNR/UHL biocriteria sampling near Ida Grove. Based on a comparison to results of ecoregion reference site sampling, the fish community was rated "fair" (Fish IBI=39), and the benthic macroinvertebrate community was rated "good" (BM IBI=70). These results suggest that the aquatic life uses are "fully supported / threatened." This assessment is also based on results from a DNR stream use assessment conducted in October 1995 near Ida Grove (see assessment for the 1998 report above). Results of this stream use assessment also suggest that the Class B(WW) aquatic life uses are "fully supported / threatened." Fish consumption uses remained "not assessed" due to the lack of recent fish tissue monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

MAPLE R

-- Odebolt Cr to headwaters

Waterbody ID No.: IA 06-LSR-0080

Subsegment No.: 1

Subsegment Description: Odebolt Cr. to Silver Cr, Ida Co.

Subsegment Length: 37 miles

ASSESSMENT COMMENTS: Oct 1995 SUA: habscr/fshscr: 17/10 (shock) (10 spp; 3 fams). 1997 bioassess: fish 14 spp., 4 fams.; Fish IBI= 38(fair), BM-IBI (2 sites) = 69(good) 66(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report, used results of DNR stream assessment in Oct 95 to assess support of the Class B(WW) aquatic life uses as PS due to (1) habitat score (17) much worse than overall average median score for DNR stream use assessments (most impact due to extensive channelization, lack of pool development, and extensive areas of eroding streambanks), (2) fish score (10) worse than 75th percentile score (12) for assessments made with electrofishing equipment.

For the 1998 report, used results of the August 1997 DNR watershed bioassessment 1 mi NE of Ida Grove to update the assessment developed for the 1996 report. Based on results of the 1997 bioassessment, upgraded the assessment of support of the Class B(WW) aquatic life uses from PS to FST due to (1) presence of a moderately diverse fish community of 14 species from 4 families, (2) presence of a majority of the expected taxa (6 of 9) for streams in the Northwest Iowa Loess Prairies, (3) presence of the expected game fish species (channel catfish), and (4) lack of violations of Class B(WW) WQ criteria in the sampled collected during the watershed bioassessment. As described in the assessment developed for the 1996 Section 305(b) report (see above), channelization and streambank erosion remain threats to continued support of the Class B(WW) aquatic life uses.

For the 2000 report, the assessment was based on data collected in 1997 for the Maple River watershed bioassessment project conducted as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 38 (fair); the BM-IBI scores from two sites sampled were 69 and 66 (both in the "good" category). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

MAPLE R

-- Odebolt Cr to headwaters

Waterbody ID No.: IA 06-LSR-0080

Subsegment No.: 2

Subsegment Description: Silver Cr-Ida Co to Maple Cr-Cherokee Co

Subsegment Length: 37 miles

ASSESSMENT COMMENTS: DNR SUAs: habsc/fshsc: (ds->us) 22/10 & 21/13 shock; 1997 Biocriteria: Fish IBI=44 (fair),35 (fair); BM-IBI = 63 (good), 71 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assessment form indicates poor habitat conditions caused by frequent channelization. Low diversity of substrates and very little variety of current and depth. Frequent streambank erosion noted. Four species of fish captured, three of which are considered tolerant at most upstream location.

For the 1996 report, combined results of the DNR stream assessments in October 1995 near Diamond Center with results of assessment near Aurelia in 1992 to assess support of the Class B(LR) aquatic life uses as PS due to continued impacts from (1) extensive channelization, (2) pasturing of riparian zone, and (3) lack of substrate diversity (i.e., domination by sand/silt substrates).

For the 1998 report, upgraded the assessment of support of the Class B(LR) aquatic life uses due to a review of the field sheets from the October 1995 DNR stream use assessments which showed the occurrence of fish communities at both assessment locations (9 spp., 2 fams; 15 spp, 4 fams) the meet or exceed the expectations of the fish community typical of Class B(LR) streams in this region. Thus, despite the considerable alterations to aquatic habitats, this stream supports a fish community that suggests that the Class B(LR) aquatic life uses are fully supported. Threats to the continued support of this use include extensive channelization and frequent pasturing impacts. Results of two August 1997 DNR Maple River watershed bioassessments NW of Galva and SW of Aurelia support the assessment of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish communities (13 and 15 species from 4 families), (2) presence of a majority of the expected fish taxa (7 of 9 at both sites) for streams of the Northwest Iowa Loess Prairies subecoregion, and (3) lack of violation of Class B(LR) WQ criteria in the samples collected as both locations during the watershed bioassessments.

For the 2000 report, the assessment was based on data collected in 1997 for the Maple River watershed bioassessment project conducted as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

Sampling was conducted at two sites on this river reach. The F-IBI scores were 44 and 35 (both in the "fair" category); the BM-IBI scores were 63 and 71 (both in the "good" category). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

MAPLE R

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 06-LSR-0085

Subsegment No.: 0

Subsegment Description: Maple Cr. (S5, T91N, R39W, Cherokee Co.) to headwaters

Subsegment Length: 12 miles

ASSESSMENT COMMENTS: 1997 Biocriteria: Fish IBI=29 (fair), BM-IBI=67 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports.

2000 report: The assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 29 (fair), and the BM-IBI score was 67 (good). The aquatic life use support status was assessed as fully supporting/threatened (=FS/T), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

ODEBOLT CR

-- mouth to headwaters

Waterbody ID No.: IA 06-LSR-0100

Subsegment No.: 0

Subsegment Description: mouth to trib S24,T87N,R39W, Ida Co.

Subsegment Length: 9.3 miles

ASSESSMENT COMMENTS: 1997 bioassessments (dstr->upstr): (fish) 13 spp., 5 fams.; 10 spp., 4 fams.; Fish IBI= 39(fair), 35(fair); BM-IBI= 57(good), 57(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1994 or 1996 reports.

For the 1998 report used results of the two August 1997 DNR watershed bioassessments at and 2.5 mi ESE of Ida Grove to assess support of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish community for the Loess Hills and Rolling Prairie subecoregion, (2) presence of a majority of the expected fish taxa (5 of 7)* for streams in this subecoregion, and (3) lack of violations of Class B(LR) WQ criteria in the samples collected during the watershed assessments. (*Odebolt Creek is near the boundary of two subecoregions and the fish community contains species typical of each of these subecoregions.)

For the 2000 report, the assessment was based on data collected in 1997 for the Maple River watershed bioassessment project conducted as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

Sampling was conducted at two sites on this stream reach. The F-IBI scores were 39 and 35 (both in the "fair" category); the BM-IBI scores were 57 at both sites (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

ELK CR

-- mouth to headwaters

Waterbody ID No.: IA 06-LSR-0103

Subsegment No.: 0

Subsegment Description: mouth to trib S36,T88N,R39W Ida Co.

Subsegment Length: 7.1 miles

ASSESSMENT COMMENTS: 1992 SUA: habscore=25, fshscore=8 (seine). 1997 Biocriteria: Fish IBI=38 (fair), BM-IBI=67 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assessment form indicates fairly good habitat with diverse substrates and several pool/riffle sequences. Evidence of old pasture use along corridor. Difficult seining due to presence of large boulders.

For the 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST).

For the 1998 report, used results of the August 1997 DNR bioassessment 5 miles NE of Ida Grove to update the assessment of support of the Class B(LR) aquatic life uses. Results of the bioassessment are consistent with the assessment of support of the Class B(LR) uses developed for the 1994 report (=FST) due to (1) presence of a moderately diverse fish community for streams in the Northwest Iowa Loess Prairies subcoregion, (2) presence of a majority (7 of 9) of the expected fish taxa for streams in this region, and (3) lack of violations of Class B(LR) WQ criteria in the sample collected during the bioassessment.

For the 2000 report, the assessment was based on data collected in 1997 for the Maple River watershed bioassessment project conducted as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 38 (fair); the BM-IBI score was 67 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

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Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

SILVER CR

-- mouth to headwaters

Waterbody ID No.: IA 06-LSR-0107

Subsegment No.: 0

Subsegment Description: mouth to South Silver Cr, Ida Co.

Subsegment Length: 3.0 miles

ASSESSMENT COMMENTS: 1992 SUA: habscr/fshscr=20/10 (seine) (6 spp. 2 fams). 1997 Biocriteria: Fish IBI=42 (fair), BM-IBI=69 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assessment form indicates channelization, pasture use, and flow stability are major causes of habitat degradation. Frequent stream bank erosion noted. Some coarse substrate providing a little diversity of habitat.

For the 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, upgraded the the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to a review of the field sheet from the July 1992 DNR stream use assessment that shows a fish community of 6 species and 2 families (minnows; catfishes) contains a majority of the species/genera expected in Class B(LR) streams in this region. Notes on the field sheet indicate difficulty seining due to "large rocks." Follow-up monitoring is needed to better determine the status of the aquatic communities and habitats of this stream. The primary threats to the continued support of the Class B(LR) uses include frequent pasture impacts to the riparian corridor as well as frequent streambank erosion. Thus, despite the threats to continued support, the fish community present in this stream suggests that the Class B(LR) uses are fully supported. Also for the 1998 report, used results of the August 1997 DNR watershed bioassessment approx. 8 mi NNE of Ida Grove to support the assessment of the Class B(LR) aquatic life uses as FST due to (1) presence of a moderately diverse fish community (10 species from 4 families), (2) presence of a majority of the expected fish taxa (5 of 9) for streams in the Northwest Iowa Loess Prairies subcoregion, and (3) the lack of violations of Class B(LR) WQ criteria in the sample collected during the watershed bioassessment.

For the 2000 report, the assessment was based on data collected in 1997 for the Maple River watershed bioassessment project conducted as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 42 (fair); the BM-IBI score was 69 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

HALFWAY CR

-- mouth to headwaters

Waterbody ID No.: IA 06-LSR-0108

Subsegment No.: 0

Subsegment Description: mo to trib S24,T89N,R39W, Ida Co.

Subsegment Length: 3.1 miles

ASSESSMENT COMMENTS: 1994 SUA: habscr/fshscr: 19/12. 1997 Biocriteria: Fish IBI=38 (fair), BM-IBI=64 (good). 8 spp., 4 farms upstr STP; Fish IBI=32 (fair), BM-IBI=69 (good)10 spp., 4 farms dstr STP.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Stream newly designated for Class B aquatic life uses in 1995.

For the 1996 report, used results of DNR's October 1994 assessment east of Galva to assess support of the Class B(LR) aquatic life uses as PS due to (1) habitat score (19) poorer than the overall median score (22) for DNR stream use assessments and (2) notes on field sheet indicating impacts due to pasturing of riparian area and due to stream channelization. For the 1998 report, used results of two DNR bioassessments of the Maple River watershed to update the assessment of support of the Class B(LR) aquatic life uses. Based on results of the bioassessments, assess the support of the Class B(LR) uses as FST due to (1) presence of a majority of the expected fish taxa (5 of 9 upstream Galva STP; 6 of 9 downstream Galva STP) for streams in the Northwest Iowa Loess Prairies subcoregion and (2) lack of violations of Class B(LR) WQ criteria in the sample collected downstream from the Galva STP during the biocriteria sampling. A comparison of fish species richness and numbers of individuals per species suggests no WQ impact from the Galva STP.

For the 2000 report, the assessment was based on data collected in 1997 for the Maple River watershed bioassessment project conducted as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

Sampling was conducted at two sites on this stream reach: one upstream, and one downstream, of the Galva STP. Upstream from the STP, the F-IBI score was 38 (fair), and the BM-IBI score was 64 (good); downstream from STP the F-IBI score was 32 (fair), and the BM-IBI score was 69 (good). The aquatic life use support of the entire reach was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

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Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

LITTLE MAPLE R

-- mouth to headwaters

Waterbody ID No.: IA 06-LSR-0110

Subsegment No.: 0

Subsegment Description: mo to trib S20,T90N,R38W Buena Vista Co.

Subsegment Length: 6.1 miles

ASSESSMENT COMMENTS: 1992 SUA: habscore=20, fshscore=9 (seine). 1997 Biocriteria: Fish IBI=39 (fair), BM-IBI=69 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: July 1992 stream assessment form indicates pasture use and channelization are major causes of habitat degradation. Extensive stream bank erosion noted. Little diversity of substrate and instream habitat observed.

For the 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, used results of the August 1997 DNR bioassessment 4.5 mi N of Galva to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to (1) presence of a moderately diverse fish community (10 species, 4 families) for streams in the Northwest Iowa Loess Prairies subecoregion, (2) presence of a majority of the expected fish taxa (7 of 9) for streams in this subecoregion, and (3) lack of violations of Class B(LR) WQ criteria in the sample collected during the bioassessment. Threats to the continued support of the Class B(LR) uses are those identified in the assessment developed for the 1994 report (see above).

For the 2000 report, the assessment was based on data collected in 1997 for the Maple River watershed bioassessment project conducted as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 39 (fair), and the BM-IBI score was 69 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

MAPLE CR

-- mouth to headwaters

Waterbody ID No.: IA 06-LSR-0115

Subsegment No.: 0

Subsegment Description: mo to trib S1,T91N,R39W Cherokee Co.

Subsegment Length: 6.1 miles

ASSESSMENT COMMENTS: 1992 SUA: habscore=22, fshscore=8 (seine) (4 spp.); 1997 Biocriteria: Fish IBI=35 (fair), BM-IBI=70 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assessment form indicates pasture use and channel- ization are major causes of habitat degradation. Frequent stream bank erosion and prevalence of fine substrates noted. Low diversity of fish with tolerant species dominant (4 spp., 1 fam).

For the 1996 report, used assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, used results of the August 1997 DNR watershed bioassessment conducted 1.5 mi NNE of Aurelia to update the assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (see above). Used results of the 1997 bioassessment to upgrade the assessment of support of the Class B(LR) uses from PS to FST due to (1) presence of a relatively diverse fish community (13 species from 4 families) for streams in the Northwest Iowa Loess Prairies subcoregion, (2) presence of a majority of the expected fish taxa (7 of 9) for streams in this subcoregion, and (3) lack of violations of Class B(LR) WQ criteria in the sample collected during the bioassessment. As identified in the assessment developed for the 1994 report (see above), threats to the continued support of the Class B(LR) uses include pasturing of riparian area, channelization, and streambank erosion.

For the 2000 report, the assessment was based on data collected in 1997 for the Maple River watershed bioassessment project conducted as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 35 (fair); the BM-IBI score was 70 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

LITTLE SIOUX R, W FK

-- mouth to Mud Cr., Woodbury Co.

Waterbody ID No.: IA 06-LSR-0120

Subsegment No.: 0

Subsegment Description: mouth (Monona Co.) to Mud Cr at Merville, Woodbury Co.

Subsegment Length: 33 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR stream use assessments conducted in October 1995 near Hornick, Holly Springs, and Climbing Hill. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Reach not assessed for the 1994 report due to lack of stream use assessment information.

For 1996 report, used results of three October 1995 stream use assessments in Monona and Woodbury counties to assess the support of the Class B(LR) aquatic life uses as PS due to (1) habitat scores (20, 21, and 23) generally poorer than the overall median habitat score (22) for DNR stream use assessments despite relatively favorable low-flow characteristics, (2) field sheets indicate lack of habitat diversity and extensive channel alterations, (3) fish scores (11, 10, 12) generally poorer than the 75th percentile score for stream assessments made with electrofishing (although assessments were made during high flows which hindered collection efficiency). Habitat somewhat improves near the Climbing Hill sited due to meandering.

For the 1998 report, upgraded the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to a review of the field sheets from the October 1995 DNR stream use assessments that show a fish community that contains all of the expected species/genera* in Class B(LR) streams of this region. Thus, despite the threats to support of these uses from extensive channelization and frequent stream bank erosion, this stream supports a fish community that suggests that the Class B(LR) uses are fully supported. * Number of species/families at the Hornick, Holly Springs, and Climbing Hill assessment sites: 5/2; 8/3; 5/3.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." EXPLANATION: The assessment of support of the Class B(LR) uses remains based on the biological and habitat information from the three October 1995 DNR stream use assessments conducted on this reach of the West Fork Little Sioux River (see assessment for the 1998 report above). A review of the field sheets from the October 1995 assessments shows presence of all the expected fish taxa (7 of 7) for streams in the Loess Hills and Rolling Prairies (47e) subcoregion. Two of the assessment sites contained 6 of the 7 expected taxa; the remaining site contained 4 of the 7 expected taxa. According to DNR's assessment methodology for Section 305(b) reporting, these results suggest that the Class B(LR) aquatic life use are "fully supported / threatened." The October 1995 stream assessments were conducted during high flow conditions. Follow-up biological monitoring should be conducted at lower flows in summer to better determine the status of the aquatic communities of this stream reach.

Little Sioux River Subbasin

LITTLE SIOUX R, W FK

-- Mud Cr @ Movable to headwaters

Waterbody ID No.: IA 06-LSR-0130

Subsegment No.: 0

Subsegment Description: Mud Cr to trib S3,T91N,R42W Cherokee Co.

Subsegment Length: 15 miles

ASSESSMENT COMMENTS: Assessment is based on results of an October 1995 DNR stream use assessment near Movable. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Extensive pastured areas and ditching have degraded aquatic habitat. Only tolerant fish species are abundant.

For 1996 report, use assessment of support of Class B(LR) aquatic life uses developed for the 1994 report (=PS). The October 1995 assessment upstream from Movable was in a partially meandered reach of the W.Fk Little Sioux. Habitat conditions were somewhat improved and the number of fish species somewhat greater (12 versus 5, 8, and 5 proceeding downstream). Despite this improvement, scores are still marginal for full support of a B(LR) stream; thus maintain assessment of PS aquatic life uses.

For the 1998 report, upgraded the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to a review of field sheets from DNR stream use assessments in July 1992, July 1994, and October 1995 that shows a fish community in this stream that contains a majority of the expected species/genera typical of Class B(LR) streams in this region. Results of this review, however, are consistent with the 1996 305(b) assessment (above) that suggests that this is a marginal Class B(LR) stream. Relative high stream flows during the July 1994 and October 1995 stream use assessments limited the effectiveness of sampling this fish community; thus, additional monitoring is needed to better define the aquatic communities and habitats of this stream. Despite the continued threats from extensive channelization and frequent streambank erosion, the fish community present in this stream suggests that the Class B(LR) uses are fully supported.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." EXPLANATION: The assessment of support of the Class B(LR) uses remains based on the biological and habitat information from the October 1995 DNR stream use assessments conducted near Movable on this reach of the West Fork Little Sioux River (see assessment for the 1998 report above). A review of the field sheet from the October 1995 assessment shows presence of a majority of the expected fish taxa (5 of 9) for streams in the Northwest Iowa Loess Prairies (47a) subcoregion. According to DNR's assessment methodology for Section 305(b) reporting, these results suggest that the Class B(LR) aquatic life uses are "fully supported / threatened." The October 1995 stream assessment was conducted during high flow conditions. Follow-up biological monitoring should be conducted at lower flows in summer to better determine the status of the aquatic communities of this stream reach. (Note: The upper reaches of the West Fork Little Sioux River lie in the "fuzzy boundary" region between the Northwest Iowa Loess Prairies (47a) and the Loess Hills and Rolling Prairies (47e) subcoregions. The fish community of this reach shows affinities to both subcoregions; Section 305(b) scoring for the October 1995 assessment for either subcoregion does not affect the assessment result of "fully supported / threatened" for this stream reach.)

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Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

WILLOW CR

-- mouth to headwaters

Waterbody ID No.: IA 06-LSR-0150

Subsegment No.: 0

Subsegment Description: mo to trib S31,T91N,R41W Cherokee Co.

Subsegment Length: 8.3 miles

ASSESSMENT COMMENTS: 1995 biocriteria: habscore=25/fshscore=12 (shocked). 1995 Biocriteria: Fish IBI=40(fair), BM-IBI=46(fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

1994: Pasture impacts on channel may pose the greatest threat to the aquatic community of this stream. Habitat is fair to good for small stream in this region.

For 1996: Used data from one biocriteria sampling location in B(LR) segment. Used stream use assessment project habitat and fish metrics to evaluate aquatic life use support status. Results of 1989 survey conducted by Olson and Howell (DNR) show a relatively diverse fish community (12 species; 5 families) and a relatively undisturbed prairie stream. Nearly all the fish taxa expected for streams in the NW Iowa Loess Prairies (8 of 9) were present.

For the 1998 report, continued to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST) due to (1) presence of a moderately diverse fish community for this subcoregion (12 spp., 5 fams in 1989 survey & 12 spp., 4 fams in the 1995 biocriteria sampling) and (2) presence of a majority of the fish taxa expected in stream of this subcoregion (6 of 9). Presence of the southern redbelly dace in the 1989 survey suggests above average water quality.

2000 report: The DNR/EPD stream assessment project data collected in 1989 were not used to determine the degree of aquatic life use support for this waterbody segment because the data are more than five years old, and no longer considered current. The assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 40(fair), and the BM-IBI score was 46(fair). The aquatic life use support status was assessed as fully supporting /threatened (=FS/T), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998. Physical habitat was rated as fairly-good in the reach of stream sampled. Livestock grazing impacts in the stream riparian zone and channel modifications caused by historic stream channelization projects probably pose the greatest threat to the stream's biological community.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Western Iowa River Basins

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Little Sioux River Subbasin

MILL CR

-- mouth to Whiskey Cr.

Waterbody ID No.: IA 06-LSR-0170

Subsegment No.: 0

Subsegment Description: mo to Whisky Cr., O'Brien Co.

Subsegment Length: 27 miles

ASSESSMENT COMMENTS: Assessment is based on results of a DNR/UHL biocriteria sampling in 1998 (Fish IBI=43 (fair), BM-IBI=75 (good)).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the DNR stream use assessment in Oct. 1994, combined with DNR fishery survey in June 1989, to assess the B(LR) aquatic life uses as FST due to (1) habitat score (25) better than the overall habitat score (22) for DNR stream use assessments, (2) results of 1989 survey that showed 16 fish species from four families including channel catfish to 24" TL, and (3) comments on field sheet from Oct. 1994 assessment: "very nice habitat, particularly at 40 cfs and even lower flows."

For the 1998 report, continued to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST). Results of the 1989 DNR survey show that nearly all the expected fish taxa (8 of 9) for streams in the NW Iowa Loess Prairies (47a) subcoregion were present. Although this suggests full support of the Class B(LR) uses, these data are nearly 10 years old; thus, continue to use the 1996 assessment. Additional monitoring is needed to update this assessment.

For the 2000 report: **SUMMARY:** The Class B(LR) aquatic life uses were assessed as "fully supported / threatened." **EXPLANATION:** The primary basis for the previous assessment of the Class B(LR) uses was the DNR fish survey from June 1989. Results from this survey are now too old (greater than five years) for developing an assessment of current water quality conditions. The current assessment is based on results on a 1998 DNR/UHL biocriteria sampling of fish and benthic macroinvertebrates. Based on a comparison to results of ecoregion reference site sampling, the fish community was rated fair (Fish IBI=43), and the macroinvertebrate community was rated good (MB IBI=75). These results suggest that the aquatic life uses are "fully supported / threatened."

MILL CR

-- Whiskey Cr. to headwaters

Waterbody ID No.: IA 06-LSR-0180

Subsegment No.: 0

Subsegment Description: Whiskey Cr to W. Br. Mill Cr. O'Brien Co

Subsegment Length: 29 miles

ASSESSMENT COMMENTS: Assessment is based on results of an October 1994 DNR stream use assessment in O'Brien Co. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of the Oct. 1994 DNR stream use assessment to assess support of the Class B(LR) aquatic life uses as FST due to (1) fish score (14) much better than the 75th percentile score (10) for DNR stream use assessments made with seines, (2) habitat score (21) is below the overall median score for DNR stream use assessments (22), but strength of fish score does not suggest an impairment. Continued support of aquatic life uses threatened by extensive channelization.

For the 1998 report, continue to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1996 report (=FST). A review of the field sheet from the October 1994 DNR stream use assessments shows (1) a moderately diverse fish community (11 species from 3 families) for stream in the NW Iowa Loess Prairies (47a) subcoregion and (2) presence of a majority of the expected fish taxa (7 of 9) for this subcoregion.

For the 2000 report: **SUMMARY:** The Class B(LR) aquatic life uses remain assessed as "fully supported / threatened." **EXPLANATION:** Continue to use the assessment of support of the Class B(LR) uses developed for the 1998 report (see above).

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Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

WATERMAN CR

-- mouth to headwaters

Waterbody ID No.: IA 06-LSR-0200

Subsegment No.: 0

Subsegment Description: mo to Epping Cr, O'Brien Co.

Subsegment Length: 26 miles

ASSESSMENT COMMENTS: Habsc/fshscr=25/13 (shock); 19/14 (seine) 1995 Biocriteria: Fish IBI=50(good), BM-IBI=62(good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996, used data from one biocriteria sampling location in O'Brien County. Habitat and fish metrics from stream use assessment protocol were applied to the data to make the overall determination of use support status (=FST). The October 1994 stream use assessment in S18,T-96N,R-39W in O'Brien County showed relatively poor quality habitat but an above average fish community of 12 species from 3 families.

For the 1998 report, used results of the August 1995 DNR biocriteria sampling to upgrade the assessment of support of the Class B(LR) aquatic life uses from FST to FS due to (1) presence of a relatively diverse fish community (16 species from 5 families) & (2) presence of nearly all the expected fish taxa (8 of 9) for streams in the NW Iowa Loess Prairies (47a) subecoregion.

2000 report: The DNR/EPD stream assessment project data collected in 1994 were used to determine the degree of aquatic life use support for this waterbody segment. The assessment was also based on data collected in 1995 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 50 (good), and the BM-IBI score was 62 (good). The aquatic life use support status was assessed as fully supporting (=FS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

L WATERMAN CR

-- mouth to headwaters

Waterbody ID No.: IA 06-LSR-0202

Subsegment No.: 0

Subsegment Description: mouth to headwaters

Subsegment Length: 9.2 miles

ASSESSMENT COMMENTS: 1996 biocriteria: Fish IBI=55 (good) 14 spp., 4 fams., BM-IBI=53 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed prior to the 1998 report.

For the 1998 report, used results of the July 1996 DNR stream biocriteria sampling to assess support of the Class B(LR) aquatic life uses as FST due to (1) nearly all expected fish taxa present and (7 of 9) & (2) no violations of Class B(LR) WQ criteria in the sample collected during biocriteria sampling. Site was sampled as a reference site for the 47a subregion.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 55 (good) and the BM-IBI score was 53 (fair). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

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Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

BIG MUDDY CR

-- mouth to headwaters

Waterbody ID No.: IA 06-LSR-0247

Subsegment No.: 0

Subsegment Description: mo to trib S17,T98N,R35W, Clay Co.

Subsegment Length: 18 miles

ASSESSMENT COMMENTS: 1995 biocriteria: habscr/fshscr=20/11 (shock, 14 spp., 5 fams). 1994 SUA: 19/11, 8 spp., 4 fams., seine. 1995 Biocriteria: Fish IBI=36 (fair), BM-IBI=79 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1996 report: Used data from one biocriteria site in Clay County to make use support determination. Fish and habitat metrics from the stream use assessment protocol were applied to the data. Results indicate fairly poor habitat quality due to excessive sediment, widening of channel, and removal of natural riparian vegetation. Fish community was dominated by relatively pollution-tolerant cyprinids and other fish. Fairly low number of fish sampled. Water was moderately turbid.

For the 1998 report, upgraded the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to (1) presence of a moderately diverse fish community for streams of the Des Moines Lobe (47b) subecoregion (14 species from 5 families) and (2) presence of a majority of the expected fish taxa (9 of 11) for streams in this region. Presence of a good diversity of fish including the expected species for Class B(LR) streams of this region, indicates that the Class B(LR) uses are being achieved. As described in the assessment developed for the 1996 Section 305(b) report (see above) the primary threat to the continued support of these uses is poor quality of aquatic habitats due to channel alterations including removal of the natural riparian vegetation, that have led to channel widening and sedimentation.

For the 2000 report, the assessment was based on data collected in 1995 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 36 (fair) and the BM-IBI score was 79 (good). The aquatic life use support was assessed as fully supported / threatened (=FST), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

OCHEYEDAN R

-- mouth to L. Ocheyedan R.

Waterbody ID No.: IA 06-LSR-0250

Subsegment No.: 0

Subsegment Description: mouth (Clay Co.) to L. Ocheyedan R

Subsegment Length: 24 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR quarterly water quality monitoring near Spencer in FY98 and FY99. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully

Aquatic Life Support -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, assessed with fixed monitoring data as FST; i.e., no violations of Class B(LR) WQC. DNR staff assessed this reach as PS due to siltation and nutrients from agricultural nonpoint sources.

For 1994 report, used monitoring info from 1990 and 1991 and used results of stream use assessment as summarized for upstream reach (IA 06-LSR-260); i.e., habitat alterations and flow alterations due to channelization and agricultural development.

For 1996 report, used assessment of the B(LR) aquatic life uses developed for the 1994 report (PS).

For the 1998 report, changed the assessment of support of the Class B(LR) aquatic life used to "not assessed" due to (1) age of the WQ data from the DNR quarterly monitoring station near Spencer (> 5 years) & (2) lack of any biological monitoring in this reach from either DNR stream use assessments or DNR biocriteria sampling. The DNR quarterly station will again be monitored during FFYs 1998-99. Biological monitoring is needed in this reach to provide information necessary for developing an assessment of support of the Class B(LR) uses.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses were assessed as "fully supported." EXPLANATION: The assessment of the Class B(LR) uses was based on results of monitoring during the 1998-1999 biennial period from the DNR quarterly station on the Ocheyedan River near Spencer. Based on the lack of violations of Class B(LR) criteria for pH, dissolved oxygen, and ammonia in the seven samples analyzed during the biennial period, and due to the lack of violations of Class B(LR) chronic criteria for toxic metals in the two samples analyzed during this period, the aquatic life uses were assessed as "fully supported." This assessment was based on results of quarterly monitoring. Results from stations monitored monthly or more frequently, however, are preferred for Section 305(b) assessments in order to improve the accuracy and confidence level of the assessment. As part of DNR's expanded water quality monitoring program, monthly monitoring at the Spencer station began in October 1999.

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Rivers and Streams: Western Iowa River Basins

Little Sioux River Subbasin

OCHEYEDAN R

-- L. Ocheyedan R. to IA-MN line

Waterbody ID No.: IA 06-LSR-0260

Subsegment No.: 0

Subsegment Description: L. Ocheyedan R. to IA-MN state line

Subsegment Length: 20 miles

ASSESSMENT COMMENTS: Assessment is based on results of fish surveys conducted by staff/students at Lakeside Laboratory in June 1989 (see attached document for details).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Stream assessment forms indicate frequent channelization. Stream is remeandering w/in straightened channel. Flow stability is a concern. Habitat is slightly below average for streams of this region.

For the 1996 report, used assessment of the B(LR) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, reviewed field sheets from the two October 1990 DNR stream use assessments and incorporated results of a fish survey conducted by Neil Bernstein and his students from Lakeside Laboratory in June 1998 to upgrade the assessment of support of the Class B(LR) aquatic life uses from PS to FST due to the following: (1) comments from the 1990 DNR field sheets such as "good pool/riffle areas," "very diverse habitat, rocky, weeds, and sand/gravels," and "good numbers of fish." Although frequent channelization was identified as the main impact to habitat quality, the assessors noted the re-meandering of the channel and the resultant improvement in habitat quality. The June 1998 fish survey by Bernstein and his students from Lakeside Lab showed a moderately diverse fish community (14 species from 5 families) for the NW Iowa Loess Prairies (47a) subcoregion and the presence of nearly all the expected fish taxa (8 of 9) for streams in the subcoregion. These results indicate that the Class B(LR) aquatic life uses are fully supported. The primary threat to the continued support of these uses is the impact of past channelization activities.

MILFORD CR

-- mouth to headwaters

Waterbody ID No.: IA 06-LSR-0300

Subsegment No.: 0

Subsegment Description: mo to trib S18,T98N,R36W Dickinson Co.

Subsegment Length: 2.9 miles

ASSESSMENT COMMENTS: Assessment is based on results of an October 1995 DNR stream use assessment at Milford. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Habitat diversity is noted as being low. Frequent channel alterations from quarry operations are noted. Without continuous flow from Milford STP, natural flow stability would be low. Very few fish observed for the amount of stream seined. Most fish were in bridge pool.

For 1996 report, used assessment of B(LR) uses developed for the 1994 report (=PS).

For the 1998 report, continued to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=PS). A review of the field sheets from the October 1994 DNR stream use assessments shows a fish community in Milford Creek that lacks several of the expected species/ genera for Class B(LR) streams in this region. Additional monitoring is needed to determine the status of the aquatic communities and habitats of this stream, to determine the degree to which the Class B(LR) uses may be impaired, and to identify potential sources of any impairment. Based on comments on the October 1990 field sheets, the impairments to the Class B(LR) uses suggested by the composition of the fish community may be related to the predominance of STP effluent in this creek. Results of the October 1995 DNR fish survey showed a very diverse fish community of 19 species from 8 families, with much of this diversity due to presence of typically lake-dwelling species such as northern pike, yellow bass, largemouth bass, crappie, yellow perch, and walleye. Although species of the minnow family (Cyprinidae) typically dominate numerically in Iowa's Class B(LR) streams, the only cyprinid species captured at Milford was carp, and only 4 of the 11 fish taxa expected for Class B(LR) streams in the Des Moines Lobe (47b) subcoregion were present, thus suggesting some type of impairment. Follow-up monitoring is needed.

For the 2000 report: SUMMARY: The Class B(LR) aquatic life uses remain assessed as "partially supported." EXPLANATION: Continue to use the assessment of support of the Class B(LR) uses developed for the 1998 report (see above).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Western Iowa River Basins

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Little Sioux River Subbasin

LITTLE SIOUX R, W FK

-- mouth to IA-MN line

Waterbody ID No.: IA 06-LSR-0310

Subsegment No.: 0

Subsegment Description: mouth to IA-MN line

Subsegment Length: 11 miles

ASSESSMENT COMMENTS: 1990 SUA: habscr=23, fshscr=11 (seine). Difficulty; 1996 Biocriteria: Fish IBI=57 (good), BM-IBI=43 (fair).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Overall assessment is based on one site assessment in which approximately 120 feet of stream was seined in October 90. Eight fish species observed. Stream is marginally fully supporting/threatened. Pasture impacts and flow stability may be the most limiting factors to health of aquatic community.

For 1996 report, used assessment developed for the 1994 report (FST).

For the 1998 report, continued to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report. A review of the field sheet from the October 1990 DNR stream use assessment shows that sampling of the fish community was hampered by field stone and rocks along the shoreline. Evaluation of the aquatic habitats shows no moderate or severe impacts to the aquatic habitats of this stream; only isolated areas of pasture impacts and stream bank erosion noted. Additional biological monitoring is needed to update this assessment and to determine the status of the aquatic communities of this stream.

For the 2000 report, the assessment was based on data collected in 1996 as part of the DNR/UHL stream biocriteria project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum) to 100 (maximum).

The F-IBI score was 57 (good) and the BM-IBI score was 43 (fair). The aquatic life use support was assessed as partially supported (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305(b) report. The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998.

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Rivers and Streams: Western Iowa River Basins

Soldier River Subbasin

SOLDIER R

-- mouth to E. Soldier R.

Waterbody ID No.: IA 06-SOL-0010

Subsegment No.: 0

Subsegment Description: mouth to E. Soldier R., Monona Co.

Subsegment Length: 35 miles

ASSESSMENT COMMENTS: Assessment is based on results of DNR monthly water quality monitoring near Pisgah, Harrison Co. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, reach was assessed as NS its Class B(WW) uses due to one sample with violations for chromium (acute) & copper (chronic). This sample was collected in fall 1989, and TSS for that sample were 2,800 (i.e., an order of magnitude greater than is typical for this stream. Reach was assessed as NS but source was identified as natural (8600).

For 1994 report, also had sample with metals violations (chromium=80 ug/l > acute criterion; copper=90 ug/l > acute criterion, and lead = 60 ug/l > chronic criterion). TSS for this sample, however, were even higher (6,000 mg/l) than in the 1989 sample. Thus, assess support of Class B(WW) uses based on habitat alterations due to channelization and flow alterations and attribute the high levels of metals to high TSS in the sample (i.e., not an impairment). One of 24 samples viol DO criterion.

For 1996 report, used assessment of the B(WW) aquatic life uses (PS) developed for the 1994 report. No violations of toxics criteria since the October 1992 sample with 6,000 mg/l TSS. No violations of any other Class B(WW) criteria. Assessment as PS based on habitat alterations due to extensive channelization and to the resultant flow alterations.

For the 1998 report, upgraded the assessment of support of the Class B(WW) aquatic life uses from PS to FST with the the primary threats to support of the Class B(WW) uses being alterations to aquatic habitat due to extensive channelization of this river. Results from the DNR WQ monitoring station near Pisgah show no violations of Class B(WW) WQ criteria for conventional or toxic contaminants in the 24 samples collected between Oct 95 and Sep 97. The sample collected on June 10, 1996 contained a level of total dissolved solids (4,400 mg/l) that exceeded the Iowa general use WQ criterion of 750 mg/l. This violation of the general use criterion does not suggest an impairment of water quality. This assessment was made without the benefit of biological information for this reach of the Soldier River. Additional monitoring is needed to determine the status of the aquatic communities and habitats of this river and to provide information for an improved assessment of support of the Class B(WW) uses. Until such monitoring is conducted, the assessment will be based on results of monthly water quality monitoring at Pisgah.

For the 2000 report: SUMMARY: The Class B(WW) aquatic life uses were assessed as "fully supporting." Fish consumption uses remained "not assessed." EXPLANATION: The assessments of support of beneficial uses were based on results of DNR monthly water quality monitoring conducted on the Soldier River near Pisgah (station 950032) during the 1998-1999 biennial period. None of the 24 samples collected during the 1998-1999 biennial period violated Class B(WW) water quality criteria for pH, dissolved oxygen, or ammonia-nitrogen; no violations occurred in the one sample analyzed for toxic metals. For the 1998 report, the Class B(WW) aquatic life uses were assessed as "fully supported" but "threatened" due to historical impacts of extensive channelization and other impacts of the riparian corridor of the Soldier River (see above). This assessment of "threatened," however, was strictly a "professional judgement" and was not supported by field assessments of either habitat or the biological communities. Until such assessments are conducted, the assessment of support of the Class B(WW) uses will be based only on results of the available information on chemical water quality monitoring and the comparisons of these results to the Iowa Water Quality Standards. Thus, the Class B(WW) uses were assessed as "fully supporting" for the 2000 report. Support of the fish consumption uses remains "not assessed" due to the lack of recent fish contaminant monitoring in this river reach.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Rivers and Streams: Western Iowa River Basins

Missouri River and Direct Tributaries

PIGEON CR

-- General use segment. New waterbody segment for the 2000 305(b) cycle.

Waterbody ID No.: IA 06-WED-0042

Subsegment No.: 0

Subsegment Description: N. Pigeon Cr (S5, T76N, R43W, Pottawattamie Co.) to headwaters

Subsegment Length: 33 miles

ASSESSMENT COMMENTS: 1997 Biocriteria: Fish IBI= 3 (very poor), BM-IBI= 64 (good).

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports due to lack of water quality information.

2000 report: The assessment was based on data collected in 1997 as part of the DNR/UHL stream biocriteria development project. A series of biological metrics which reflect stream water quality and habitat integrity were calculated from the biocriteria sampling data. The biological metrics are based on the numbers and types of benthic macroinvertebrate taxa and fish species that were collected in the stream sampling reach. The biological metrics were combined to make a fish community index of biotic integrity (F-IBI) and a benthic macroinvertebrate index (BM-IBI). The indexes rank the biological integrity of a stream sampling reach on a rising scale from 0 (minimum)-100 (maximum).

The F-IBI score was 3 (very poor), and the BM-IBI score was 64 (good). The aquatic life use support status was assessed as partially supporting (=PS), based on a comparison of the F-IBI and BM-IBI scores with biological assessment criteria established specifically for the 2000 Section 305b report (IDNR 2000). The biological assessment criteria were determined from a statistical analysis of data collected at stream ecoregion reference sites from 1994-1998. Fish sampling results are moderately suspect due to elevated flow and turbidity levels during sampling. Additional sampling during lower flow stage is recommended to confirm results.

Rivers and Streams: Western Iowa River Basins

Missouri River and Direct Tributaries

MISSOURI R

-- IA-MO line to Platte R.

Waterbody ID No.: IA 06-WEM-0010

Subsegment No.: 0

Subsegment Description: IA-MO line to Platte R.

Subsegment Length: 41 miles

ASSESSMENT COMMENTS: Assessment is based on surveys of Nebraska fisheries biologists and consultation with DNR staff. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, all fish contams were less than FDA action levels; thus, assessed support of fish consumption uses as FS. DNR staff, using BPJ, assessed both Class A and B uses as PS.

For 1994 report, again have all fish contams < 1/2 FDA action levels (detected traces of dioxins and furans in 1991, but follow-up for 1992 RAFT showed no detectable levels of these substances). Overall assessment will remain PS due to impacts of channelization, flow modifications of the river, and due to siltation delivered to the river from the larger tribs (e.g., Platte R.).

For 1996 report, used assessment developed for the 1994 report.

For the 1998 report, continued to assess support of the Class B(WW) aquatic life uses as PS due to habitat alterations and flow modifications that resulted from development of the river for navigation uses in the mid-Twentieth Century. This assessment was presented to the Nebraska fisheries biologist for the Missouri River and to DNR/EPD staff with historical involvement with Missouri River issues. These professionals agreed with the assessment that aquatic life uses are "partially supported." The habitat alterations are due to channelization of the river, while the flow modifications are due primarily to control of river flows through the system of mainstem dams upriver from Sioux City. Assessed support of fish consumption uses as FS based on results of RAFT sampling at Nebraska City in 1993: levels of contaminants in the composite sample of carp fillets were all below 1/2 of the respective FDA action levels.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(WW) aquatic life uses remain assessed as "partially supported." The fish consumption uses were considered "not assessed." EXPLANATION: The Class A uses remained "not assessed" due to the lack of monitoring data for indicator bacteria for this reach of the Missouri River. The Class B(WW) uses remained assessed as "partially supported" based on the assessment developed for the 1998 report (see above). This assessment was developed in consultation with the Missouri River fisheries biologist for the state of Nebraska. Fish consumption uses were changed from "fully supported" to "not assessed" due to the lack of recent fish tissue monitoring data from this reach of river. The most recent monitoring was conducted in 1993 near Nebraska City as part of the EPA/DNR fish tissue (RAFT) monitoring program. These data are now considered too old (greater than five years) for characterizing current contaminant levels in Missouri River fish.

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Rivers and Streams: Western Iowa River Basins

Missouri River and Direct Tributaries

MISSOURI R

-- Platte R. to Boyer R.

Waterbody ID No.: IA 06-WEM-0020

Subsegment No.: 1

Subsegment Description: Platte R. to WS intake at Council Bluffs

Subsegment Length: 39 miles

ASSESSMENT COMMENTS: Assessment is based on (1) surveys of Nebraska fisheries biologists, (2) consultation with DNR staff and (3) results of fish tissue (RAFT) monitoring in 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, reach was not assessed.

For the 1994 report, all fish contams were < 1/2 FDA action levels; thus assess fish consumption as FS. For 1992 report, DNR staff used BPJ to assess reach as PS due to siltation and nutrients from agricult. NPS. For 1994 report, assessed reach as PS due to habitat alterations from hydromodifications and alterations of flow regime.

For 1996 report, used assessments developed for the 1994 report.

For the 1998 report, continued to assess support of the Class B(WW) aquatic life uses as PS due to habitat alterations and flow modifications that resulted from development of the river for navigation uses in the mid-Twentieth Century. This assessment was presented to the Nebraska fisheries biologist for the Missouri River and to DNR/EPD staff with historical involvement with Missouri River issues. These professionals agreed with the assessment that aquatic life uses are "partially supported." The habitat alterations are due channelization of the river, while the flow modifications are due primarily to control of river flows through the system of mainstem dams upriver from Sioux City. Assessed support of the fish consumption uses as FS based on results of RAFT sampling in 1993 at Long's Landing near Council Bluffs that showed levels of all contaminants less than 1/2 the respective FDA action levels in the composite sample of carp fillets.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(WW) aquatic life uses remain assessed as "partially supported." The fish consumption uses were assessed as "fully supported." EXPLANATION: The Class A uses remained "not assessed" due to the lack of monitoring data for indicator bacteria for this reach of the Missouri River. The Class B(WW) uses remained assessed as "partially supported" based on the assessment developed for the 1998 report (see above). This assessment was developed in consultation with the Missouri River fisheries biologist for the state of Nebraska. Fish consumption uses were assessed as "fully supported" based on EPA/DNR fish tissue (RAFT) monitoring just south of Council Bluffs in 1999 that showed levels of all contaminants were less than 1/2 of the respective FDA action levels in the composite samples of fillets from carp and flathead catfish (levels of contaminants were unusually low in this sample; 21 of 23 contaminants were below the respective analytical detection levels).

Rivers and Streams: Western Iowa River Basins

Missouri River and Direct Tributaries

MISSOURI R

-- Platte R. to Boyer R.

Waterbody ID No.: IA 06-WEM-0020

Subsegment No.: 2

Subsegment Description: WS intake @ Council Bluffs to Boyer R.

Subsegment Length: 39 miles

ASSESSMENT COMMENTS: Assessment is based on (1) surveys of Nebraska fisheries biologists, (2) consultation with DNR staff and (3) results of USGS/ NASQAN monitoring at Omaha (I-80 bridge). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

No info. available; not assessed for the 1994 or 1996 reports.

For the 1998 report, used monitoring results from the USGS WQ monitoring station at Omaha sampled as part of the National Stream-quality Accounting Network (NASQAN) to develop assessments of support of the Class B(WW) aquatic life uses and the Class C drinking water uses (data were not reported for indicator bacteria to assess Class A primary contact recreation uses). In the 28 samples collected between January 1996 and September 1997, only one violation of a conventional or toxic contaminant was reported: on July 18, 1996, the level of dissolved oxygen (4.8 mg/l) violated the Class B(WW) WQ criterion of 5.0 mg/l. This single violation does not suggest impairment. Levels of all but one Class C contaminant-- including nitrate+nitrite, alachlor, cyanazine, arsenic, cadmium, chromium, copper, lead, and zinc, were well below MCLs and Class C WQ criteria. The only violation of a Class C WQ criterion was for atrazine in the sample collected on June 24, 1996; this sample contained 4.00 ug/l of atrazine, thus exceeding the 3.0 ug/l MCL. The average level of atrazine in the 28 samples was 0.29 ug/l; the median 0.083 ug/l, with a range of 0.017 to 4.0 ug/l; 4% of the samples exceeded the MCL for atrazine. Based on guidelines described on page 3-18 of the Supplement to the U.S. EPA Guidelines for preparation of the 1998 Section 305(b) report, with modifications provided by DNR, assess support of the Class C drinking water uses as FST. Despite the relatively good chemical water quality that fully supports both aquatic life and drinking water uses, the Class B(WW) aquatic life uses of this reach were assessed as PS due to habitat alterations and flow modifications that resulted from development of the river for navigation uses in the mid- Twentieth Century. This assessment was presented to the Nebraska fisheries biologist for the Missouri River and to DNR/EPD staff with historical involvement with Missouri River issues. These professionals agreed with the assessment that aquatic life uses are "partially supported." The habitat alterations are due to channelization of the river, while the flow modifications are due primarily to control of river flows through the system of mainstem dams upriver from Sioux City.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remained "not assessed." The Class B(WW) aquatic life uses were assessed as "partially supported." Class C (drinking water) uses were assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses remained "not assessed" due to lack of data on levels of indicator bacteria in this river reach. The assessment s of support for the Class B(WW) and Class C uses were based on results of water quality monitoring conducted from October 1997 through September 1999 by the U.S. Geological Survey at the National Stream Quality Accounting Network (NASQAN) station at Omaha (station 06610000). The Class B(WW) uses were assessed as "partially supported" based (1) the assessments developed for the 1998 report indicating impairments due to habitat alterations and flow modifications (see above) and (2) results of USGS monitoring showing that two of 29 samples (7%) analyzed for dieldrin during the 1998-1999 biennial period exceeded the Class B(WW) chronic criterion of 0.0019 ug/l. The sample collected on August 7, 1999, contained 0.007 ug/l and the sample collected on August 23, 1999, contained 0.101 ug/l of dieldrin. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), the two violations of the chronic criterion for dieldrin indicate that the aquatic life uses are only "partially supported." Levels of conventional and toxic parameters (pH, dissolved oxygen, and ammonia-nitrogen) and pesticides other than dieldrin (for example, chlorpyrifos, lindane, and parathion) were all below Class B(WW) criteria in the 29 samples analyzed during the biennial period. Similarly, levels of toxic metals (for example, cadmium, chromium, and copper) were all below the respective Class B(WW) chronic criteria in the 19 samples analyzed. Class C (drinking water) uses were assessed as "fully supported" due to the lack of violations of Class C criteria at the USGS station. Levels of nitrate, atrazine, alachlor, cyanazine and toxic metals were well below their respective Class C criteria, MCLs and/or MCLGs in the 29 samples analyzed during the biennial period. Fish consumption uses were "not assessed" due to the lack of fish tissue monitoring in this reach of the Missouri River.

Rivers and Streams: Western Iowa River Basins

Missouri River and Direct Tributaries

MISSOURI R

-- Boyer R. to L. Sioux R.

Waterbody ID No.: IA 06-WEM-0030

Subsegment No.: 0

Subsegment Description: Boyer R. to L. Sioux R.

Subsegment Length: 33 miles

ASSESSMENT COMMENTS: Assessment is based on (1) surveys of Nebraska fisheries biologists, (2) consultation with DNR staff and (3) results of fish tissue (RAFT) monitoring near Little Sioux in 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Fully Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, all fish contams were < 1/2 FDA action levels; thus, assessed fish consumption uses as FS. DNR staff used BPI to assess reach as PS due to siltation and nutrients from agriculture. For 1994 report, used info from 1992 to assess fish consumption uses as FS. Assessed support of aquatic life as PS due to hydo modification and flow alteration of river.

For 1996 report, used assessment developed for the 1994 report.

For the 1998 report, continued to assess support of the Class B(WW) aquatic life uses as PS due to habitat alterations and flow modifications that resulted from development of the river for navigation uses in the mid-Twentieth Century. This assessment was presented to the Nebraska fisheries biologist for the Missouri River and to DNR/EPD staff with historical involvement with Missouri River issues. These professionals agreed with the assessment that aquatic life uses are "partially supported." The habitat alterations are due to channelization of the river, while the flow modifications are primarily due to control of river flows through the system of mainstem dams upriver from Sioux City. Also, continue to assess support of fish consumption uses as FS based on 1997 RAFT sampling near Little Sioux which showed that levels of all contaminants in the composite samples of carp filets and flathead catfish filets were less than 1/2 of the respective FDA action levels.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(WW) aquatic life uses remain assessed as "partially supported." The fish consumption uses remained assessed as "fully supported." EXPLANATION: The Class A uses remained "not assessed" due to the lack of monitoring data for indicator bacteria for this reach of the Missouri River. The Class B(WW) uses remained assessed as "partially supported" based on the assessment developed for the 1998 report (see above). This assessment was developed in consultation with the Missouri River fisheries biologist for the state of Nebraska. Fish consumption uses remain assessed as "fully supported" based on EPA/DNR fish tissue (RAFT) monitoring near Little Sioux (Harrison County) in 1997 that showed levels of all contaminants were less than 1/2 of the respective FDA action levels (see assessment for the 1998 report above).

Rivers and Streams: Western Iowa River Basins

Missouri River and Direct Tributaries

MISSOURI R

-- L. Sioux R. to Big Sioux R.

Waterbody ID No.: IA 06-WEM-0040

Subsegment No.: 0

Subsegment Description: Little Sioux R. to Big Sioux R.

Subsegment Length: 63 miles

ASSESSMENT COMMENTS: Assessment is based on (1) surveys of Nebraska fisheries biologists, (2) consultation with DNR staff, and (3) fish tissue (RAFT) monitoring in 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Fully Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, reach was assessed only with BPJ of DNR staff: assessed as PS due to siltation and nutrients from ag. NPS.

For 1994 report, used info from 1991 RAFT site to assess fish consumption uses as FS (all contams < 1/2 FDA action levels). Used my (JRO) BPJ to assess aquatic life support as PS due to habitat alterations that have resulted from the hydrological modifications of the river and from alterations of the flow regime.

For 1996 report, used assessment developed for the 1994 report.

For the 1998 report, continued to assess support of the Class B(WW) aquatic life uses as PS due to habitat alterations and flow modifications that resulted from development of the river for navigation uses in the mid-Twentieth Century. This assessment was presented to the Nebraska fisheries biologist for the Missouri River and to DNR/EPD staff with historical involvement with Missouri River issues. These professionals agreed with the assessment that aquatic life uses are "partially supported." The habitat alterations are due to channelization of the river, while the flow modifications are due primarily to control of river flows through the system of mainstem dams upriver from Sioux City. Continued to assess support of the fish consumption uses as FS based on results of 1991 RAFT monitoring near Sergeant Bluff that showed that levels of all contaminants were less than 1/2 of the respective FDA action levels in the

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remained "not assessed." The Class B(WW) aquatic life uses remained assessed as "partially supported." The fish consumption uses were assessed as "fully supported." EXPLANATION: The Class A uses remained "not assessed" due to the lack of monitoring data for indicator bacteria for this reach of the Missouri River. The Class B(WW) uses remained assessed as "partially supported" based on the assessment developed for the 1998 report (see above). This assessment was developed in consultation with the Missouri River fisheries biologist for the state of Nebraska. Fish consumption uses remain assessed as "fully supported" based on EPA/DNR fish tissue (RAFT) monitoring near Sergeant Bluff (Woodbury County) in 1998 that showed levels of all contaminants were less than 1/2 of the respective FDA action levels and DNR levels of concern in the composite samples of filets from carp and freshwater drum. Levels of contaminants were unusually low in these samples, with 20 of 23 contaminants below their analytical detection levels.

Lakes, Wetlands, and Flood Control Reservoirs: ADAIR CO

Lake Greenfield

Adair County, S14,T75N,R32W, approx. 1 mile SW Greenfield.

LAKE SIZE: 50 Acres

Waterbody ID No.: IA 05-NOD-00770-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on 1995 survey of Iowa water supply reservoirs (Miller and Kennedy 1995). See attached document for details.**SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:**

Overall Use Support	-- Threatened	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Not assessed	Drinking Water Supply	-- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

As of June 1996, this lake has not been designated for beneficial uses in the Iowa Water Quality Standards. Not assessed for the 1994 report.

For the 1996 report, used results of sampling for 8 common agricultural herbicides and two metabolites at two locations (inlet and dam) on January 11, 1995, to assess support of the Class C (drinking water) uses as FST due to (1) detection of only one herbicide (atrazine) in water or sediment, (2) relatively low levels of atrazine at dam and inlet (0.25 and 0.18 ug/l) compared to average reportable concentration for the 19 water supply reservoirs in this study (=0.84 ug/l), and (3) the MCL for atrazine was not exceeded.

For the 1998 and 2000 reports, continued to use the assessment of support of the Class C drinking water use (=FST) developed for the 1996 report. No information is available for developing an assessment of support for the Class B(LW) aquatic life uses.

Meadow Lake

Adair County, S17,T76N,R31W, 5 mi N of Greenfield.

LAKE SIZE: 42 Acres

Waterbody ID No.: IA 04-LDM-02870-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Fisheries Bureau. See attached document for details.**SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:**

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Assessment changed from PS in 1992 report to FST based on recommendation of DNR Fisheries. Lake was monitored as part of ISU Clean Lakes classification study in 1990. Levels of P, NO₃, chl-a, secchi, and TSS indicate no special WQ problems*. Lake was also monitored as part of 1990 UHL Iowa lakes study. A loss of depth was reported (max depth from 25' in 1979 to 19' in 1990; thus lake was assessed as PS. DNR Fisheries staff (Bonneau), however, feels that lake fully supports uses but is threatened by siltation from ag runoff. Although desig for swim uses, mgmt area has not been developed for primary contact rec. * Average levels of all parameters sampled in 1990 w/in 1 SD of the respective mean for all 96 lakes. DSC (1991:4) states that "WQ and recreational use ar both high in Meadow Lake. Neither appear to be adversely impacted by siltation or other nonpoint sources of pollution."

For 1996 report, used assessment of support of the primary contact recreation and aquatic life uses developed for the 1994 report.

For the 1998 report, previous assessment of support of the Class B(LW) aquatic life uses (=FST) was reviewed and approved by the DNR Fisheries Bureau. No information available for developing an assessment of support of the Class A primary contact recreation uses.

For the 2000 report, the previous assessment of support of the Class B(LW) aquatic life uses (=FST) was reviewed and approved by the DNR Fisheries Bureau in 2000. No information is available for developing an assessment of support of the Class A primary contact recreation uses.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: ADAIR CO

Mormon Trail Lake

Adair County, S17,T76N,R31W, 1.5 mi SE of Bridgewater.

LAKE SIZE: 35 Acres

Waterbody ID No.: IA 05-NOD-00820-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys by the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Assessment changed from PS in 1992 report to FST due to recommendation from DNR Fisheries. Average levels of all parameters sampled in 1990 (secchi, NO3, total-P, chl-a, and TSS) within 1 SD of the respective mean for all 96 lakes. Average levels of secchi, total-P, chl-a, and TSS are much better than average for the 86 SPO impoundments sampled in 1990 and 1992. Sedimentation rate and life expectancy are also much better than average for SPO impoundments in Iowa. Level of swimming use reported by Bachmann et al. (1994) is higher than the typical SPO impoundment in Iowa. Levels of total-P and chl-a are in the best 10% of the 86 SPO impoundments sampled in 1990 and 1992. DNR Fisheries report that lake is threatened by siltation from AG NPS.

For 1996 report, used assessment of support of the primary contact and aquatic life uses developed for the 1994 report. Used results of sampling for the 1994 Regional Ambient Fish Tissue (RAFT) monitoring program to assess support of fish consumption uses as FS due to levels of all contaminants less than 1/2 all FDA action levels in composite samples of channel catfish and largemouth bass.

For the 1998 report, continue to use the assessments of support of the Class A primary contact recreation uses (=FST), the Class B(LW) aquatic life uses (=FST), and the fish consumption uses (=FS) as developed for the 1994 and 1996 reports. The assessment of support of the Class B(LW) aquatic life uses was reviewed and approved by the DNR Fisheries Bureau.

For the 2000 report, continue to use the assessments of support of the Class B(LW) aquatic life uses (=FST) and the fish consumption uses (=FS) as developed for the 1994 and 1996 reports. The assessment of support of the Class B(LW) aquatic life uses was reviewed and approved by the DNR Fisheries Bureau in 2000. The assessment of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to lack of information on levels of indicator bacteria at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: ADAIR CO

Orient Lake

Adair County, S20,T74N,R31W, approx 1 mi SW of Orient.

LAKE SIZE: 15 Acres

Waterbody ID No.: IA 05-NOD-00485-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on (1) surveys of the DNR Fisheries Bureau and (2) a 1995 survey of Iowa water supply reservoirs (Miller & Kennedy 1995). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Threatened		

BASIS FOR ASSESSMENT AND COMMENTS:

DNR Fisheries (Bonneau) not familiar w/ this lake. All parameters sampled by ISU in 1990 (secchi, NO₃, total-P, chl-a, and TSS) within 1 SD of the respective mean for all 96 lakes sampled in 1990; average levels of secchi depth and total-P are worse than the overall averages for the 86 SPO impoundments sampled in 1990 and 1992; average levels of chl-a and TSS are approx equal to the overall averages. Lake has a relatively high sedimentation rate (4.6 cm/yr) and a relatively short life expectancy (43 years) for an SPO impoundment in Iowa. DNR fishing forecast for 1994 notes the following regarding Orient: "always turbid water." Although lake is designated for swimmable uses, the lake does not have a swimming beach, and Bachmann et al report swimming use as zero.

For 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS). Lake was sampled in January 1995 as part of a study of herbicides in water and sediment from 19 Iowa water supply reservoirs (UHL report 95-1 by Miller and Kennedy). Water and sediment samples from the inlet and near the dam were analyzed for 8 common Iowa herbicides and two metabolites. Only atrazine and desethyl- atrazine were detected in water; only alachlor was detected in sediment. All concentrations were considered low for Iowa lakes and none approached MCLs. Thus, assess support of the Class C drinking water uses as FST (even though the town of Orient now receives 100% of drinking water from the Greenfield Water Works).

For the 1998 report, continue to use the assessments of support for the Class B(LW) aquatic life uses (=PS) and the Class C drinking water uses (=FST) developed for the 1996 report. The assessment of support of the Class B(LW) uses was reviewed and approved by the DNR Fisheries Bureau. This lake was placed on Iowa's 1998 list of Section 303(d) waters due to water quality impacts from siltation.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(LW) aquatic life uses remain assessed as "partially supported." The Class C (drinking water) uses remain assessed as "fully supported / threatened." EXPLANATION: The Class A (primary contact recreation) uses remain "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The assessment of support of the Class B(LW) uses was reviewed and approved by the DNR Fisheries Bureau in 2000. The assessment of support of the Class C (drinking water) uses remains based on the UHL survey of water supply reservoirs in 1995 (Miller and Kennedy 1995) (see assessment developed for the 1996 report above). Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: ADAMS CO

Binder Lake

Adams County, S25,T72N,R34W, 1 mile NE of Corning.

LAKE SIZE: 60 Acres

Waterbody ID No.: IA 05-NOD-00415-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on results of a 1995 survey of Iowa water supply reservoirs (Miller and Kennedy (1995). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Threatened		

BASIS FOR ASSESSMENT AND COMMENTS:

Lake was monitored near the dam and inlet on February 2, 1993 for 7 ag herbicides in water and sediment. Low levels of atrazine (0.16 ug/l and 0.19 ug/l) were in water at the inlet and dam; no herbicides were detected in sediment. Compared to the other 14 reservoirs, levels of atrazine were low. Additional monitoring is needed to determine levels of herbicides during summer. Because level of atrazine were < 1/2 MCL, DW uses were assessed as FST.

For 1996 report, used results of sampling on January 10, 1995 for eight common agricultural herbicides as reported in Miller and Kennedy (1995) to continue to assess support of the Class C (drinking water) uses as FST due to (1) levels of atrazine (0.66 and 0.82 ug/l, dam and inlet) similar to average level for all 19 reservoirs in this study and (2) lack of violations of the MCL for atrazine. Atrazine levels in 1995 were higher than in 1993 (0.16 and 0.19 ug/l, inlet and dam). Levels of cyanazine in 1995 (1.4 and 1.1 ug/l, inlet and dam) were slightly higher than the overall average for the 19 reservoirs. Used information in "Adams County Three Lakes Water Quality Project" application submitted by the Adams County Soil and Water Conservation District to DNR in March 1996 to assess support of the Class B(LW) uses as PS due to impacts of sediment eroded from agricultural lands in the watershed. Application does not indicate any specific problems with the use of this lake as a source of potable water. Lakes Icaria and West Corning are also included in the project.

For the 1998 report, continued to use the assessments of support of the Class B(LW) aquatic life uses (=PS) and the Class C drinking water uses (=FST) developed for the 1996 report. No information available for assessing support of the Class A primary contact recreation uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(LW) aquatic life uses were considered "not assessed." The Class C (drinking water) uses remain assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses remain "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The assessment of support of the Class B(LW) was changed to "not assessed" due to lack of recent information on the fisheries of this lake. The assessment of support of the Class C (drinking water) uses remains based on the UHL survey of water supply reservoirs in 1995 (Miller and Kennedy 1995) (see assessment developed for the 1996 report above). Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: ADAMS CO

Lake Icaria

Adams County, S10,T72N,R34W, 4 mi N of Corning.

LAKE SIZE: 669 Acres

Waterbody ID No.: IA 05-NOD-00550-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Fisheries Bureau. See attached document for details.**SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:**

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report; both uses were assessed as PS for the 1994 report for the following reasons: (1) BPJ of DNR Fisheries ("muddy lake"), 2 average levels of all parameters sampled by ISU in 1990 (secchi, NO3, total-P, chl-a, and TSS) were at, or better than, overall mean values for all 96 lakes; i.e., data from 1990 show relatively good water quality; (3) levels of all fish contams. in samples of CCAT filets collected in 1993 were < 1/2 FDA action levels; (4) lake has relatively low sedimentation rate (1.3 cm/yr) and long life expectancy (268 years) for SPO impound. in Iowa; level of fishing use and swimming use reported by Bachmann et al. (1994) are both extremely high for an Iowa SPOL. Thus, lake has above average WQ & levels of use for fishing and swimming, and has fish with very low levels of contamination. DSC (1991) notes improving fishery due to NPS control prgs in WS.

For 1996 report, used assessments of support of designated uses developed for the 1994 report; no new information available. Lake is included in the "Adams County Three Lakes Water Quality Project" submitted to DNR in March 1996 by the Adams County Soil and Water Conservation District. Project seeks to implement further NPS control in the watershed of Icaria, Binder, and Corning West lakes.

For the 1998 report, continued to use the assessments of support of the Class A primary contact recreation and Class B(LW) aquatic life uses (both = PS) used for the 1996 report. Both uses are believed impaired by turbidity and siltation related to delivery of silt from the watershed. These assessments were reviewed and approved by the DNR Fisheries Bureau. This lake was placed on Iowa's 1998 list of Section 303(d) waters due to water quality impacts from turbidity and siltation.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were "not assessed." The Class B(LW) aquatic life uses remain assessed as "partially supported." The Class C (drinking water) uses remain "not assessed." Fish consumption uses were "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses was reviewed and approved by the DNR Fisheries Bureau in 2000. The assessment of support of the Class C (drinking water) uses was "not assessed" due to lack of recent water quality information. Fish consumption used remain "not assessed" due to lack of recent fish contaminant monitoring at this lake. The most recent fish tissue (RAFT) monitoring was conducted in 1993 (see above). Results from this monitoring are now considered too old (greater than five years) for characterizing current conditions.

Lakes, Wetlands, and Flood Control Reservoirs:

APPANOOSE CO

Centerville Reservoir Lower

Appanoose County, S12,T68N,R18W near Centerville.

LAKE SIZE: 20 Acres

Waterbody ID No.: IA 05-CHA-00330-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on a 1995 survey of Iowa water supply reservoirs (Miller and Kennedy 1995). See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Threatened		

BASIS FOR ASSESSMENT AND COMMENTS:

Lake was sampled on Feb 9, 1993; of the seven herbicides analyzed in the sample from the upper end of the reservoir, both atrazine (1.9 ug/l) and cyanazine (0.51 ug/l) were detected. Herbicides detected in sediment were atrazine (14 ug/kg) and alachlor (36 ug/kg). The highest concentrations of atrazine in water from both the upper and lower reservoirs were the highest of the 15 reservoirs sampled; both reservoirs also contained the highest level of atrazine in sediment. Although MCLs were not exceeded, comparison to Corydon Res, for which more detailed data exist for 1991 (Kalkhoff 1993), suggests that levels of herbicides likely exceed MCLs during summer months. More sampling is needed.

For the 1996 report, used results of Miller and Kennedy's (1995) winter survey of 19 Iowa water supply reservoirs to assess support of the Class C (drinking water) uses as FST due to (1) relatively low levels of common agricultural herbicides in both water (atrazine: 0.91 ug/l; cyanazine 0.60 ug/l) and sediment and (2) the absence of any MCL violations.

For the 1998 report, continue to use the assessment of support of the Class C drinking water uses (=FST) developed for the 1996 report. No information available for developing an assessment of support of the Class A (primary contact recreation) or Class B(LW) (aquatic life) uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain "not assessed." The Class C (drinking water) uses remain assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses remain "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The Class B(LW) remain "not assessed" due to the lack of recent information on the status of aquatic life at this lake. The assessment of support of the Class C (drinking water) uses remains based on the UHL survey of water supply reservoirs in 1995 (Miller and Kennedy 1995) (see assessment developed for the 1996 report above). Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: APPANOOSE CO

Centerville Reservoir Upper

Appanoose County, S11,T68N,R18W near Centerville.

LAKE SIZE: 200 Acres

Waterbody ID No.: IA 05-CHA-00325-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of a 1995 survey of Iowa water supply reservoirs (Miller and Kennedy 1995. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Threatened		

BASIS FOR ASSESSMENT AND COMMENTS:

Lake was sampled on Feb 9, 1993; of the seven herbicides analyzed in the sample from the middle reach of the reservoir, both atrazine (2.3 ug/l) and cyanazine (0.61 ug/l) were detected in water; in sediment, atrazine (16 ug/kg) and alachlor (90 ug/kg) were detected. These are the highest levels of atrazine in water and sediment, and of alachlor in sediment, for the 15 WS reservoirs sampled in the study. Comparison to results of a study in 1991 at Corydon Reservoir (Kalkhoff 1993) suggests that MCLs for atrazine are exceeded during summer months. More monitoring is needed.

For 1996 report, used results of sampling of lake on January 19, 1995 by Miller and Kennedy (1995) for common agricultural pesticides to assess support of the Class C (drinking water) uses as FST due to (1) relatively low levels of pesticides detected in the water column (2.5 ug/l atrazine; 1.5 ug/l cyanazine) and (2) lack of any MCL violations. The concentration of atrazine was the second highest of the 19 water supply reservoirs sampled for the study and approached the MCL for atrazine of 3.0 ug/l. Comparison of lake samples to finished water suggests some removal of pesticides in the treatment process that uses powdered activated carbon.

For the 1998 report, continue to use the assessment of support of the Class C drinking water uses (=FST) developed for the 1996 report. No information available for developing an assessment of support of the Class A (primary contact recreation) or Class B(LW) (aquatic life) uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain "not assessed." The Class C (drinking water) uses remain assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses remain "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The Class B(LW) remain "not assessed" due to the lack of recent information on the status of aquatic life at this lake. The assessment of support of the Class C (drinking water) uses remains based on the UHL survey of water supply reservoirs in 1995 (Miller and Kennedy 1995) (see assessment developed for the 1996 report above). Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

Rathbun Reservoir

Appanoose County, approx 6 miles N of Centerville.

LAKE SIZE: 11000 Acres

Waterbody ID No.: IA 05-CHA-0020-L

Waterbody Type: Freshwater Reservoir

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of water quality monitoring conducted by the U.S. Army Corps of Engineers in 1998 and 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Fully
Drinking Water Supply	-- Threatened		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: In May 1993, ACOE (Kansas City district) monitored WQ at four sites and levels of bacteria at four sites. Levels of atrazine in water ranged from 0.3 to 0.7 ppb; levels of cyanazine ranged from 0.1 to 0.6 ppb. The following levels of bacteria were reported for May 11, 1993: Buck Cr beach: 70 per 100ml; Buck Cr. Marina: 70; Southfork Marina: 300; beach at N end of dam: 4. No violations of WQ criteria for DO, pH, ammonia, Class B toxics (except Hg), or Class C toxics were reported. Thus, this information suggests that the reservoir fully support designated uses but is threatened by pesticides (Class C use), and bacteria (Class A use); Class B uses are fully supported.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FST), Class B(WW) aquatic life uses (=FST), and the Class C (drinking water) uses (=FST) developed for the 1994 report.

For the 1998 report, used results of WQ monitoring conducted by the U.S. Army Corps of Engineers at the Rathbun Lake outlet (RA-28), at intake area (RA-3), 10 miles uplake from dam (RA-7), and 10.4 miles uplake from dam (RA-8) to develop assessments of support of the Class B(WW) aquatic life uses and the Class C drinking water uses. Based on the approximately 20 samples collected between April and September 1997 at the intake area (RA-3), assessed support of the Class B(WW) aquatic life uses as FST due to lack of Class B(WW) WQ criteria for either conventional or toxic contaminants. In addition, the March/April 1998 Iowa Conservationist identifies Rathbun Lake as providing good to excellent angling opportunities for white bass, crappie, channel catfish, and walleye. Used assessment of support of the Class A primary contact recreation uses (=FST) developed for the 1996 report. Class C drinking water uses were assessed as FST: 1 of 20 samples in 1997 at intake area exceeded the MCL for atrazine (mean=2.31; median=2.34; max=3.2 ug/l). Higher levels were detected approx 10 miles uplake from dam, with from 38-57% of the 21 samples exceeding the MCL for atrazine at stations RA-7 & RA-8). Thus, as noted in summary of ACOE monitoring in 1997, "pesticide levels pose a continuing threat to the drinking water supplies. . ." Fish consumption uses assessed as FS based on results of fish contaminant monitoring conducted by ACOE in 1990.

For the 2000 report: Summary: Class A (primary contact recreation) uses were assessed as "fully supported." The Class B(WW) aquatic life uses were assessed as "fully supported / threatened." The Class C drinking water uses were assessed as "fully supported / threatened." Fish consumption uses were "not assessed." EXPLANATION: The assessments of support of the Class A, Class B(WW), and Class C uses were based on results of approximately 18 water quality monitoring events conducted at Rathbun Lake in 1998 (11 events) and 1999 (7 events) by the U.S. Army Corps of Engineers at the following stations in Rathbun Lake: (1) outlet (RA-28), (2) Honey Creek arm (RA-25), (3) downlake near dam (RA-3), (4) 10 miles uplake from dam in the Chariton arm (RA-7), and (5) 10.4 miles uplake from dam in the South Fork arm (RA-8). The results of this monitoring are summarized in the "Rathbun Lake Water Quality Reports" for 1998 and 1999 (see ACOE 1999 and Kirsh and Leonard 2000). The Class A (primary contact recreation) uses were assessed as "fully supported" based on results of beach monitoring initiated during the 1999 sampling year. Results of monitoring at Buck Creek beach, Buck Creek Marina, Island View beach, and South Fork Marina on three dates (June 14, July 12, and August 18) showed that levels of indicator bacteria (fecal coliforms) were all below the Iowa Class A water quality criterion of 200 orgs/100 ml. Thus, the Class A uses were assessed as "fully supported." The Class B(WW) aquatic life uses were assessed as "fully supported / threatened" based on results of ACOE monitoring that showed no violations of Iowa Class B(WW) water quality criteria for pH and dissolved oxygen. The occurrence of a violation of the Class B(WW) criterion for dissolved oxygen at the South Fork arm station (RA-8) on June 15, 1999 (3.6 mg/l in surface samples), however, suggests a threat to the full support of these uses. The Class C drinking water uses remain assessed as "fully supported / threatened." Results of pesticide monitoring in 1998 and 1999 near the dam (station RA-3) and at the lake outlet area (RA-28) showed no violations of the MCL for atrazine. The mean, minimum, and maximum atrazine levels at station RA-3 were 1.2 ug/l, 0.73 ug/l, and 1.71 ug/l in 1998 and 0.86 ug/l, 0.52 ug/l, and 1.31 ug/l in 1999. The mean, minimum, and maximum atrazine levels at the outlet area (station RA-28) were 1.15 ug/l, 0.90 ug/l, and 1.72 ug/l in 1998 and 0.85 ug/l, 0.51 ug/l, and 1.50 ug/l in 1999. Levels of atrazine did exceed the MCL at the uplake stations (RA-7 and RA-8) in May and June 1998, with mean/maximum levels of 2.14/12.60 ug/l at RA-7 (Chariton arm) and 3.54/16.7 ug/l at RA-8 (South Fork arm). All samples were below the MCL at these station in 1999 (maximum levels: RA-7: 1.00 ug/l; RA-8: 1.91 ug/l). Levels of cyanazine at the up-lake stations exhibited a similar pattern to atrazine, with maximum levels above the 1.0 ug/l MCLG in 1998 but not in 1999. The mean/minimum/maximum levels of cyanazine at station RA-7 were 0.27/0.05/1.05 ug/l in 1998 and 0.07/0.04/0.18 ug/l in 1999. The mean/minimum/maximum levels of cyanazine at station RA-8 were 0.30/0.05/1.30 ug/l in 1998 and 0.06/0.04/0.20 ug/l in 1999. No samples exceeded the cyanazine MCLG at the station near the dam (RA-3) or at the outflow area (RA-28) during either 1998 or 1999. Although levels of atrazine were below the MCL at the stations near the dam and at the outlet area (the vicinity of the drinking water intake), the occasionally higher levels at the uplake stations, and the routinely higher levels (at times, over 50 ug/l-in reservoir tributaries), suggest a continued threat to the full support of the drinking water uses of this reservoir. In addition to the Army Corps of Engineer monitoring for pesticides, data on atrazine were collected in 1998 as part of the Novartis "Iowa Voluntary Atrazine Monitoring Program." This monitoring showed that the time-weighted mean level of atrazine in samples collected from the Rathbun raw water source from January to December 1998 (0.9 ug/l, N=31, maximum=1.6 ug/l) was well below the MCL of 3.0 ug/l. Based on DNR's Section 305(b) assessment methodology, if the average contaminant level in source water is less than the MCL, and levels in all samples are below the MCL, the Class C (drinking water) uses

Lakes, Wetlands, and Flood Control Reservoirs: APPANOOSE CO

of the source water should be assessed as "fully supported." Due, however, to the relatively high levels of atrazine in tributaries to Rathbun Reservoir, the Class C (drinking water) uses were assessed as "fully supported / threatened." Fish consumption uses were considered "not assessed" due to the lack of recent fish tissue monitoring data for the reservoir. The most recent fish tissue monitoring was conducted in 1990 (see assessment for the 1998 report above).

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Lakes, Wetlands, and Flood Control Reservoirs: AUDUBON CO

Littlefield Lake

Audubon County, S17,T78N,R34W, approx 4 mi SE of Exira.

LAKE SIZE: 56 Acres

Waterbody ID No.: IA 05-NSH-00675-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

This lake, despite impoundment in the early 1980s, has not yet been designated in the Iowa water quality standards. Assessment for fishable and swimmable uses is based on recreational use data in Bachmann et al. (1994). Both fishable and swimmable uses were assessed as PS for the 1992 report; both were assessed as PS for the 1994 report for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring show that the average level of secchi depth is worse than the overall average for the 86 SPO impoundments sampled in 1990 and 1992 and approaches 1 SD worse than the overall average; average levels of chl-a, total-P, and TSS are better than the overall averages; (3) Bachmann et al. report relatively low levels of fishing use and swimming use; (4) sedimentation rate (3.9 cm/yr) and life expectancy (62 years) are relatively poor for SPO impoundments and suggest impairment due to sediment delivered to the lake in ag NPSP.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and Class B(LW) aquatic life uses (=PS) developed for the 1994 report. No new information available.

For the 1998 report, continued to assess support of both the Class A primary contact recreation uses and the Class B(LW) aquatic life uses as partially supported (=PS) due to siltation and turbidity from nonpoint source pollution. These assessments were reviewed and approved by the DNR Fisheries Bureau. This lake was added to Iowa's 1998 list of Section 303(d) waters due to water quality impairments from silt delivered to the lake from its watershed.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were "not assessed." The Class B(LW) aquatic life uses remain assessed as "partially supported." Fish consumption uses were "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported" was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: BENTON CO

Dudgeon Lake

Benton County, S9,T85N,R10W, at N edge of Vinton

LAKE SIZE: 150 Acres

Waterbody ID No.: IA 02-CED-00365-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Wildlife Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Assessment was changed from PS in 1992 report to FST due to recommendation from DNR Fisheries (Bonneau). This wetland complex is threatened by sediment loads in the Cedar River deposited in the wetlands during periods of high water.

For 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report. No new information available.

For the 1998 report, continued to assess support of the Class B(LW) aquatic life uses as FST, with threats from siltation. This assessment was reviewed and approved by the DNR Wildlife Bureau. (DNR Wildlife suggested that the acreage for this wetland be changed from 45 to approximately 150 acres, with better estimates of acreage needed.)

For the 2000 report: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." The previous (1998) assessment was reviewed and approved by the DNR Wildlife Bureau in 2000.

Hannan Lake

Benton County, S32,T82N,R11W, 4 mi SW of Blairstown.

LAKE SIZE: 38 Acres

Waterbody ID No.: IA 02-IOW-01810-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys of DNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report, assessment changed from PS to FST. Means of P, NO3, Chl a, and TSS from 1990 show no special WQ problems*. Lake was also assessed as part of UHL Iowa lakes study in 1990. This study showed no decrease in depth due to siltation and no WQ problems. Thus, assessment was upgraded from PS to FST. *Average levels of all these parameters were better than overall means for the 96 lakes sampled in 1990; i.e., better than average water quality. Sedimentation rate (2.1 cm/yr) and life expectancy (131 years) are better than the typical SPO impoundment. Levels of use reported by Bachmann et al. are rel high for fishing and rel low for swimming. DSC (1991: 4) reports that (1) recreational uses have not been impaired by NPSP and (2) WQ trend is stable.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class A and Class B(LW) uses developed for the 1994 report. These assessments were reviewed and approved by the DNR Fisheries Bureau.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: BENTON CO

Rodgers Park Lake

Benton County, S1,T86N,R11W, 3.5 mi NW of Vinton.

LAKE SIZE: 22 Acres

Waterbody ID No.: IA 02-CED-02750-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys of DNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Lake was assessed at PS for the 1992 report. Results from ISU monitoring in 1990 show total-P, NO₃, and TSS in the highest 33 percent of the 96 lakes sampled. Levels of secchi depth were relatively low (0.3 m), while the average level of chl-a was also low, thus suggesting turbidity due to suspended sediment. Thus, data suggest a water quality problem due to agricultural runoff.

Lake will remain assessed as PS for the 1994 report. Lake has one of the highest sedimentation rates (8.2 cm/yr) and shortest life expectancies (27 years) of any SPOL in Iowa. Level of swimming use reported by Bachmann et al. (1994) is relatively low, but is not in the lowest 10% of SPO impoundments sampled in 1990 and 1992. Levels of total-P, TSS, and secchi in worst 10% of 86 SPO impoundments sampled in 90 & 92.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, continued to assess support of both the Class A primary contact recreation uses and the Class B(LW) aquatic life uses as PS due to impacts of turbidity and siltation. These assessments were reviewed and approved by the DNR Fisheries Bureau. This lake was placed on Iowa's 1998 list of Section 303(d) waters due to water quality impacts of silt delivered to the lake from its watershed.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Fish consumption uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: BLACK HAWK

Big Woods Lake

Black Hawk County, S1, T89N, R14W, N edge of Cedar Falls.

LAKE SIZE: 55 Acres

Waterbody ID No.: IA 02-CED-00487-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring in 1996. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Fish Consumption -- Fully

Aquatic Life Support -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

New lake. Sampled for the 1996 RAFT at suggest of DNR Fisheries biologist.

For the 1998 report, used results of the 1996 fish tissue sampling conducted for the U.S. EPA/DNR Regional Ambient Fish Tissue (RAFT) monitoring program to assess support of fish consumption uses as FS. Levels of contaminant in both the composite fillet samples of largemouth bass and channel catfish were well below 1/2 of respective FDA action levels.

For the 2000 report: SUMMARY: The fish consumption uses of this new lake remain assessed as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The fish consumption uses remain "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1996 (see assessment developed for the 1998 report above). The other beneficial uses remain "not assessed" due to lack of water quality information.

Lakes, Wetlands, and Flood Control Reservoirs: **BLACK HAWK**

George Wyth Lake

Black Hawk County, S6,T89N,R13W, at N edge of Waterloo.

LAKE SIZE: 51 Acres

Waterbody ID No.: IA 02-CED-00485-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on results of (1) DNR/Parks beach monitoring in 1999, (2) surveys conducted by DNR Fisheries Bureau, and (3) fish tissue (RAFT) monitoring in 1995. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Reer)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Assessment from the 1992 report (FS) was kept for the 1994 report for the following reasons: levels of chl-a, total-P, secchi, TSS, sed rate, all better than overall averages for SPO impoundments sampled in 1990 and 1992. Levels of use for swimming and fishing reported by Bachmann et al (1994) are well above average for SPO impoundments in Iowa.

For 1994 report: The relatively large amount of the lake with depth less than 10 feet, and the lack of permanent thermal stratification in summer (Bachmann et al. 1994) may partially explain the very slight reduction in water quality; however, available information and past assessment as FS suggest no water quality problems for this lake.

For 1996 report, used assessments of support for the Class A (primary contact) uses (=FS) and the Class B(LW) aquatic life uses (=FS) developed for the 1994 report. Used results of fish contaminant monitoring conducted for 1995 DNR/EPA Regional Ambient Fish Tissue (RAFT) monitoring program to assess support of fish consumption uses as FS due to levels of all contaminants less than 1/2 of FDA action levels in the composite samples of channel catfish and largemouth bass filets analyzed.

For the 1998 report, downgraded support of the Class B(WW) aquatic life uses to FST, with threat of siltation nutrients from urban nonpoint sources, as suggested by the DNR Fisheries Bureau. The water quality trend remains "stable." Continued to used the assessment of support of the Class A primary contact recreation uses (=FS) and fish consumption uses (=FS) that were developed for the 1996 report.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "fully supporting." The Class B(LW) aquatic life uses remained assessed as fully supporting / threatened"; fish consumption uses remained assessed as "fully supported." EXPLANATION: Levels of indicator bacteria at George Wyth Lake beach were monitored approximately twice per week during summer 1999 by DNR Parks, Recreation and Preserves Division as part of a beach monitoring program at 11 state-owned lakes. Results of the 35 samples collected at this beach showed that levels of indicator bacteria (fecal coliforms) were generally low, with the overall geometric mean (23 orgs/100 ml) well below the state water quality criterion of 200 orgs/100 ml. The maximum level of fecal coliforms in the 34 samples was 370 orgs/100 ml on June 7, 1999. According to U.S. EPA guidelines for determining "full support" of primary contact uses (U.S. EPA 1997b, page 3-35), the geometric mean of fecal coliform bacteria levels should not exceed 200 orgs/100ml based on at least five samples in a 30-day period. In addition, not more than 10% of the total samples taken during any 30-day period should have a density that exceeds 400 orgs/100 ml. None of the sixteen 30-day periods during summer 1999 had geometric means (N = from 6 to 10 samples per period) greater than the state water quality criterion of 200 orgs/100ml.; the maximum 30-day geometric mean was 56 orgs/100ml. No samples exceeded the EPA-recommended single sample maximum density for fecal coliform bacteria of 400 orgs/100ml. Thus, the Class A (primary contact recreation) uses were assessed as "fully supported." The Class B(LW) aquatic life uses remain assessed as "fully supporting / threatened" based on review and approval of the previous (1998) assessments by the DNR Fisheries Bureau in 2000. Fish consumption remained assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1995 that showed levels of all contaminants in the composite samples of filets from channel catfish and largemouth bass were less than 1/2 of respective FDA action levels and DNR levels of concern.

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Lakes, Wetlands, and Flood Control Reservoirs: BLACK HAWK

Meyer Lake

Black Hawk County, S6,T88N,R12W, at Waterloo.

LAKE SIZE: 26 Acres

Waterbody ID No.: IA 02-CED-00460-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assesment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Results of monitoring conducted in 1992 for the 1994 ISU Clean Lakes Classification study show that total-P and TSS are at or better than average levels for all SPOL lakes in Iowa sampled between 1990 and 1992. Average levels of chl-a and secchi depth were worse than overall averages and approached 1 SD from the overall mean. Based on this information, assessment for the 1992 was upgraded from PS to FST for the 1994 report. Although designated for swimmable uses, Bachmann et al. (1994) reported swimming use as zero; thus, swimmable uses were not assessed. Lake does not have problems with fishkills. Lake has one of the lowest sedimentation rates (0.2 cm/yr) and longest life expects. (1113 years) of any lake identified as an SPO impoundment in Iowa. Urban runoff was identified as a source of impairment in the 1992 report.

For the 1996 report, used assessments of support of the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class B(LW) uses developed for the 1994 report (=FST). This assessment was reviewed and approved by the DNR Fisheries Bureau. No information available for developing an assessment of support of the Class A primary contact recreation uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: BOONE CO

Don Williams Lake

Boone County, S5,T84N,R27W, 5 mi. N of Ogden.

LAKE SIZE: 148 Acres

Waterbody ID No.: IA 04-UDM-01650-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys of DNR Fisheries Bureau and (2) results of fish tissue (RAFT) monitoring in 1996. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Assessment is based on the following information: 1. BPJ of DNR Fisheries says that lake has WQ problems; (2) monitoring by ISU in 1990 shows that yearly mean levels of total-P and TSS are worse than the overall means + 1SD for the 116 SPOLs sampled from 1990 to 1992; this suggests sources of organic enrichment and sediment to the lake. Levels of other parameters (chl-a and Secchi) were within 1 SD of the overall means; (3) a summary of point source impacts to SPOLs prepared in January 1993 by DNR/EPD (JRO) shows that the WW lagoons for the city of Pilot Mound discharge to Bluff Creek approx two miles upstream from the lake; this suggests the potential for PS-caused organic organic enrichment of the lake. Levels of use for swimming reported by Bachmann et al. is rel. high for SPO impoundment; thus, swimmable use assessed as FST.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report. For the 1998 report, continued to uses assessments of the support of the Class B(LW) aquatic life uses developed for the 1994 & 96 reports (=PS). Continued to assess support of Class A primary contact recreation uses as FST due to levels of swimming use from Bachmann et al. (1994); however, no data for pH or fecal bacteria) at this lake. Fish consumption uses were assessed as FS due to results of sampling for the 1996 Regional Ambient Fish Tissue Monitoring (RAFT) Monitoring Program that showed levels of contaminants in the composite samples of fillets from channel catfish and largemouth bass were below 1/2 of the respective FDA action levels. This lake was placed on Iowa's 1998 Section 303(d) list of impaired waters due to water quality impairments from organic enrichment related to municipal point sources and from siltation due to nonpoint source delivery of silt to the lake from its watershed. The assessment of the Class B(LW) uses were reviewed and approved by the DNR Fisheries Bureau.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were considered "not assessed." Continue to assess support of the Class B(LW) aquatic life uses as "partially supported." Fish consumption uses were assessed as fully supported. EXPLANATION: The Class A uses were considered "not assessed" due to a lack of information on levels of indicator bacteria for this lake. The Class B(LW) uses remained assessed as "partially supported" based on the assessments developed for previous reports (see above). The previous assessment of the Class B(LW) aquatic life uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1996 (see assessment for the 1998 report above). This lake is scheduled to be sampled as part of the ISU/DNR lake water quality monitoring project.

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Lakes, Wetlands, and Flood Control Reservoirs: BREMER CO

Sweet Marsh Reservoir

Bremer County, S34,T93N,R12W, 1 mi. E of Tripoli.

LAKE SIZE: 85 Acres

Waterbody ID No.: IA 01-WPS-01905-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assesment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Sweet Marsh Seg. A

Bremer County, S2,T92N,R12W, 1 mi. E of Tripoli.

LAKE SIZE: 390 Acres

Waterbody ID No.: IA 01-WPS-01908-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assesment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation from agricultural nonpoint sources.

For 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1992 and 1994 reports.

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1992 and 1994 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: BREMER CO

Sweet Marsh Seg. B

Bremer County, S35,T93N,R12W, 1 mi. E of Tripoli.

LAKE SIZE: 255 Acres

Waterbody ID No.: IA 01-WPS-01907-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assesment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts from siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Sweet Marsh Seg. C

Bremer County, S34,T93N,R12W, 1 mi E of Tripoli.

LAKE SIZE: 235 Acres

Waterbody ID No.: IA 01-WPS-01906-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assesment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: BUCHANAN CO

Troy Mills Marsh

Buchanan County, S25,T87N,R8W, 5 mi SSE of Quasqueton.

LAKE SIZE: 15 Acres

Waterbody ID No.: IA 01-WPS-00260-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report. This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: BUENA VISTA CO

Little Storm Lake

Buena Vista Co, S5,T90N,R77W, at W edge of Storm Lake city.

LAKE SIZE: 312 Acres

Waterbody ID No.: IA 04-RAC-00531-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments from the DNR Wildlife biologist indicate that the aquatic life uses of this wetland are "partially supported" due to siltation from agricultural nonpoint sources and due to an infestation of purple loosestrife that is causing substantial habitat degradation.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: BUENA VISTA CO

Storm Lake

Buena Vista County, S14,T90N,R37W, at Storm Lake.

LAKE SIZE: 3147 Acres

Waterbody ID No.: IA 04-RAC-00530-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: The assessment from the 1992 report ("fully supported / threatened") was changed to "partially supported." This assessment is based on BPJ of DNR Fisheries and on monitoring conducted by ISU in summer 1990. Average levels of secchi, total-P, chl-a, and TSS were all within the overall mean +/- 1SD for the 116 lakes sampled in 1990 and 1992 for the Clean Lakes Classification study. The level of TSS (42 mg/l) was near the upper range of the overall mean + 1SD (46 mg/l), thus suggesting some type of turbidity problem. DNR Fisheries reports good populations of game fish in the lake. Water, fish, and sediment were analyzed for toxic organics, pesticides, and metals as part of Clean Lakes Program Phase I study (info in Hoyman et al. (1994)); all levels of contaminants were well- below MCLs, FDA action levels, and state WQ criteria for ammonia and toxic metals. DNR Fisheries believes organic enrichment from natural shallowness could lead to a fishkill; thus assess as PS.

For 1996 report, used assessments of support of of the Class A (primary contact) uses (=FST), the Class B(LW) aquatic life uses (=PS), and the fish consumption uses (=FS) developed for the 1994 report.

For the 1998 report: The assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses remain assessed as FST, while the Class B(LW) aquatic life uses remain assessed as PS due to excessive turbidity and organic enrichment related, in part, to wind-driven resuspension of sediment and nutrients in the relatively shallow glacial lake. Due to these continuing problems, the DNR Fisheries Bureau recommended that this lake be placed on the 1998 list of Section 303(d) waters. Water quality problems in Storm Lake and its watershed have been the focus of the Storm Lake Water Quality Project. During the last four years, community education efforts and implementation of nonpoint source controls in the watershed to reduce water quality impacts. Remaining water quality problems include soil erosion, gully erosion, Purple Loosestrife control, agricultural runoff, and urban lawn care. For more information on this project, call 712/732-3096.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake during the 1998-1999 biennial period. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. This assessment identified turbidity from natural resuspension of sediment, organic enrichment from natural shallowness as the primary water quality impacts at this lake. This assessment is consistent with conclusions of a lake restoration study (Hoyman et al. 1994) that noted that Storm Lake--similar to other large, shallow, unprotected lakes--has persistent problems with turbidity due to in-lake dynamics that include wind-related resuspension of bottom sediments. Fish consumption uses were changed from "fully supported" to "not assessed" due to the lack of recent fish contaminant monitoring at this lake. The last fish tissue sample from this lake was collected and analyzed by Iowa State University in June 1993 as part of the "Storm Lake Restoration Study" (Hoyman et al. 1994); the fish species sampled was not identified [the most recent EPA/DNR (RAFT) fish tissue monitoring at Storm Lake was conducted in 1988]. Of the 16 organochlorine pesticides analyzed, only one was detected: the level of DDE (0.150 mg/kg) was well below the FDA action level for DDT+DDD+DDE of 5.0 mg/kg. Of the 11 toxic metals analyzed, mercury was the only one detected (0.080 mg/kg). The levels of both DDE and mercury were well below both U.S. FDA action levels and DNR levels of concern for fish contaminants. Thus, these results do not suggest a fish contaminant problem at Storm Lake. The result of this monitoring, however, are more than five years old. Thus, these data are considered too old to characterize current water quality conditions, and the level of support of fish consumptions uses was changed to "not assessed."

Lakes, Wetlands, and Flood Control Reservoirs: BUTLER CO

Big Marsh

Butler County, S25,T91N,R17W, 5 mi N of Parkersburg.

LAKE SIZE: 940 Acres

Waterbody ID No.: IA 02-WFC-00260-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with siltation from agricultural nonpoint sources threatening continued full support of designated uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, downgraded the assessment of support of the Class B(LW) aquatic life uses from FST to PS at the recommendation of the DNR Wildlife Bureau. This wetland is impaired by by nonpoint source delivery of silt from its watershed. Other threats include reed's canarygrass and flooding.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: CALHOUN CO

North Twin Lake

Calhoun County, S1,T88N,R33W, 4 mi N of Rockwell City.

LAKE SIZE: 454 Acres

Waterbody ID No.: IA 04-RAC-01390-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau and on information received by IDNR Water Quality Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Assessment NOT changed from 1992 report (PS) for the 94 report upon recommend of DNR Fisheries. Monitoring conducted by ISU in 90 shows that avg levels of secchi d., chl-a, TSS and total-P are approx equal to, or better than, overall averages for the 23 natural SPOLs sampled in 1990 and 1992; (2) lake does not have problems with fishkills; (3) samples of CCAT from the 1991 RAFT contained very low levels of relatively few contaminants; (4) level of swimming use reported by Bachmann et al. (1994) is rel high natural SPOLs in Iowa, and level of use for fishing is above typical level for natural SPOLs; (5) lake has a very low sed. rate (0.2 cm/yr) and relatively long life expectancy (1471 years) for natural SPOLs in Iowa. Thus, lake has average to better than average WQ, high levels of fish/swim use, and is not threatened by agriculture. Orientation of lake suggests problems with SW winds interfering w/ thermal strat. in summer.

For 1996 report, used assessment of support of the Class A (primary contact) uses (=PS), the Class B(LW) aquatic life uses (=PS), and the fish consumption uses (=FS) developed for the 1994 report.

For the 1998 report, continue to use the assessments of support of the Class A primary contact and Class B(LW) aquatic life uses (both=PS) and the fish consumption uses (=FS) developed for the 1994 report. These assessments were reviewed by the DNR Fisheries Bureau. DNR fisheries biologist noted that aquatic macrophytes are not a problem in this lake.

For the 2000 report: The Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain assessed as "partially supported." Fish consumption uses were "not assessed." EXPLANATION: The Class A uses were assessed as "partially supported" based on (1) previous assessments (see above) and (2) information from the public in 1999 suggesting that cyanotoxicity in this lake may be a problem. The possibility of cyanotoxicity at this lake needs to be investigated; the assessment of the Class A uses as "partially supported" is intended to highlight this potential impairment. The Class B(LW) uses remain assessed as "partially supported" based on the review and approval of the previous (1998) assessment by the DNR Fisheries Bureau in 2000. Fish consumption uses were "not assessed" due to the lack of recent fish contaminant monitoring at this lake. The most recent fish contaminant monitoring was conducted for the 1991 DNR/EPA fish tissue (RAFT) program. The results from the monitoring are considered too old (greater than five years) for characterizing current conditions.

South Twin Lake

Calhoun County, S1,T88N,R33W, 3 mi N of Rockwell City.

LAKE SIZE: 600 Acres

Waterbody ID No.: IA 04-RAC-01395-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: CARROLL CO

Artesian Lake

Carroll County, S27,T85N,R33W, 2 mi S of Lanesboro.

LAKE SIZE: 30 Acres

Waterbody ID No.: IA 04-RAC-00450-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on surveys of DNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, use support status upgraded from PS to FST based on DNR Wildlife Biologist recommendation. Siltation from nonpoint sources remains a threat to the continued full support of the aquatic life uses.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: CARROLL CO

Swan Lake

Carroll County, S27,T85N,R34W, 3 mi. SE of Carroll.

LAKE SIZE: 112 Acres

Waterbody ID No.: IA 04-RAC-02370-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Assessment for the 1992 report (FS) changed to PS for the 1994 report for the following reasons: (1) results of CLP monitoring show that lake has relatively high levels of bacteria and nutrients due to improper waste management and due to wildlife pens near the park; (2) data from ISU monitoring in 1990 show that average levels of chl-a and total-P are worse than the overall means +/- 1 SD for the 116 SPOLs sampled in 1990 and 1992; average for TSS is at upper bound of overall mean + 1 SD. These data suggest organic enrichment of the lake; (3) personal communications with staff of CCCB and DNR Fisheries Bureau that suggest impairments to swimming uses due to algal scums and that the large population of carp in the lake (cause 2600) is recycling nutrients and exacerbating existing problems with WQ and the quality of the fishery.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report. DNR Fisheries biologist Kay Hill has conducted water quality monitoring in 1994, 1995 and 1996, and he states that water quality in the lake remains very poor due to blooms of algae that severely limit water transparency in summer months. Hill attributes much of the problem to the large population of carp (approx 200 lbs/acre) that thrive in this shallow lake. Dave Olson (Carroll Co. Cons. Bd) stated in III:25:97 phone conversation that farmer continues to spread manure on side hill that drains to lake just outside of park boundary and spreading on frozen ground occurs. Olson said that algae blooms severely limit swimming uses and discourage boat-bass fishermen from using the lake.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses remain assessed as PS primarily due to nuisance blooms of algae, and the Class B(LW) aquatic life uses remain assessed as PS due to high levels of nutrients and due to populations of carp that contribute to turbidity and resuspension of nutrients. Due to these continuing water quality problems, this lake was placed on the list of Section 303(d) waters at the recommendation of the DNR Fisheries and Water Quality bureaus.

For the 2000 report: The Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain assessed as "partially supported." Fish consumption uses remain "not assessed." EXPLANATION: The Class A and Class B(LW) uses remain assessed as "partially supported" based on a review and approval of the previous (1996, 1998) assessments by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: CASS CO

Cold Springs Lake

Cass County, S15,T75N,R37W, 1 mi S of Lewis.

LAKE SIZE: 16 Acres

Waterbody ID No.: IA 05-NSH-00310-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Assessment for the 1992 report (FS) changed to FST for the 1994 report for the following reasons: results of monitoring in 1990 show that average levels of total-P, chl-a, and TSS are at or slightly worse than overall mean levels for the 116 SPOLs sampled in 1990 and 1992; thus, WQ is good but is typical for SPO impoundments sampled in 1990 and 1992. Lake does, however, have exceptionally low sedimentation rate (0.3 cm/yr) and exceptionally long life expectancy (796 years) for an SPO impoundment in Iowa; i.e., lake is not impaired or threatened by NPSP. Level of swimming use reported by Bachmann et al. (1994) is better than the typical SPO impoundment. Only threat to full support is naturally-occurring shallowness; i.e., mean depth of 2.1 m suggests a slight problem with resuspension of sediment and nutrients.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessment developed for the 1996 report was reviewed and approved by the DNR Fisheries Bureau. Thus, continue to assess support of the Class A (primary contact recreation) and Class B(LW) aquatic life uses as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: CASS CO

Lake Anita

Cass County, S32,T77N,R34W, 1/2 mi S Anita.

LAKE SIZE: 182 Acres

Waterbody ID No.: IA 05-NSH-00580-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Assessment changed from PS in the 1992 report to FS for the 1994 report for the following reasons: (1) DNR Fisheries considers this as one of the highest quality man-made lakes in the state; (2) results of monitoring data in 1990 show that average levels for secchi depth, total-P, and TSS are better than the overall means for the 116 SPOLs sampled in 1990 and 1992 +/- 1 SD (e.g., one of the highest secchi readings and one of the lowest TSS of the dataset). Average level of chl-a (43.9 mg/m³) was approx equal to the overall mean (43.6 mg/m³); average level of total-P (71.4 mg/m³) was approx one-half the overall mean (140.2 mg/m³). Levels of use for swimming and fishing are typical for SPO impoundments in Iowa. Indicators for transparency, productivity, and longevity are just shy of the best 10% of SPO impoundments in Iowa; considering location in steep topography, lake about the best possible; thus assess as FS.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FS) and the Class B(LW) aquatic life uses (=FS) developed for the 1994 report.

For the 1998 report, continued to use the assessments of support of the Class A primary contact recreation uses and the Class B(LW) aquatic life uses developed for the 1994 report (both=FS). These assessments were reviewed and approved by the DNR Fisheries Bureau. Results of the 1997 DNR/U.S. EPA RAFT fish contaminant monitoring program showed that levels of the relatively few contaminants detected in the composite samples of filets from channel catfish and largemouth bass were well below 1/2 of the respective FDA action levels and DNR levels of concern. Thus, assess support of the fish consumption uses as "fully supported."

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported." Fish consumption uses remain "fully supported." EXPLANATION: The Class A (primary contact recreation) uses were changed from "fully supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change reflects a change in DNR's Section 305(b) assessment methodology and does not suggest any change in lake water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "fully supported" based on results of EPA/DNR fish contaminant (RAFT) monitoring in 1997 (see assessment developed for the 1998 report above).

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Lakes, Wetlands, and Flood Control Reservoirs: CERRO GORDO

Bluewing Marsh

Cerro Gordo County, S33,T96N,R22W, 2 mi S of Ventura.

LAKE SIZE: 36 Acres

Waterbody ID No.: IA-WETLAND-01.

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate nutrients and siltation are threats to this wetland; recommends that the aquatic life uses of this wetland be assessed as FST.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: CERRO GORDO

Clear Lake

Cerro Gordo County, S13,T96N,R22W, at Clear Lake.

LAKE SIZE: 3684 Acres

Waterbody ID No.: IA 02-WIN-00450-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys of the DNR Fisheries Bureau and (2) results of DNR/Parks beach monitoring in 1999. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Fully
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Assessment in the 1992 report (PS) changed to FST in the 1994 report for the following reasons: (1) DNR Fisheries believe that the lake should be assessed as FST, (2) results of monitoring in 1990 show that average levels of total-P and chl-a are slightly worse than overall average levels for the 116 SPOLs sampled in 1990 and 1992; the average secchi depth (0.4 m) was approx one-half the overall average (1.08 m) but was within 1 SD +/-; the average level of TSS was worse than the overall mean + 1 SD. Thus, these data suggest that the lake has slightly poorer water quality than average for SPOLs in Iowa; (3) results of RAFT monitoring in 1993 show no contaminants at levels of concern. Past assessments have suggested that WQ is impacted by urban runoff from the city of Clear Lake. Levels of use for fishing and swimming are relatively high for natural SPOLs in Iowa. Lake threatened by urban runoff and instability of water level.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FST), the Class B(LW) aquatic life uses (=FST), and the fish consumption uses (=FS) developed for the 1994 report.

For the 1998 report, assessed support of the Class A primary contact recreation uses as FST due to excessive growth of phytoplankton resulting from excess nutrients (primarily phosphorus) in the lake. Hypothesized sources of excess nutrients include runoff from urban areas, agricultural runoff, naturally high soil fertility, effects of carp and other bottom bottom feeding fish, and nutrient export from nearby wetlands. During the reporting period, blooms of algae have been recognized as detracting from the aesthetic appeal of the lake for swimming, water skiing, and other Class A-type uses. A recent WQ evaluation by Wisconsin limnologist Paul Garrison suggests that, in terms of nutrient levels and levels of algae, lake water quality has been declining since the 1940s with even more rapid decline over the last five years. Several efforts are underway to address this problem, including the Clear Lake Enhancement and Restoration Project (CLEAR) and year-long WQ study proposed by limnologists at Iowa State University to identify specific sources of nutrients and recommend actions to correct WQ problems. Class B(LW) aquatic life uses were assessed as FS: the DNR Fisheries Bureau reports that Clear Lake has supported above average fish populations over the last few year. The March/April 1998 Iowa Conservationist reports that Clear Lake provides good to excellent angling opportunities for walleye, muskellunge, and channel catfish. The Class C drinking water uses designated for the lake were not assessed: no data or other information are available for developing an assessment of these uses. Continue to assess fish consumption uses as FS: levels of all contams in the sample of channel catfish fillet collected for the 1993 RAFT were < 1/2 FDA levels.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "fully supporting / threatened." The Class B(LW) aquatic life uses were assessed as fully supporting / threatened." The Class C (drinking water) uses remained "not assessed." Fish consumption uses were considered "not assessed." EXPLANATION: Levels of indicator bacteria at Clear Lake beach and McIntosh Woods beach were monitored approximately twice per week during summer 1999 by DNR Parks, Recreation and Preserves Division as part of a beach monitoring program at 11 state-owned lakes. Results of the 14 samples collected at these beaches showed that levels of indicator bacteria (fecal coliforms) were generally low, with the overall geometric means (13 orgs/100 ml at Clear Lake beach and 37 orgs/100 ml at McIntosh Woods beach) well below the state water quality criterion of 200 orgs/100 ml. The maximum level of fecal coliforms in the 14 samples was 50 orgs/100 ml at Clear Lake beach on July 20, 1999, and 210 orgs/100 ml at McIntosh Woods beach. According to U.S. EPA guidelines for determining "full support" of primary contact uses (U.S. EPA 1997b, page 3-35), the geometric mean of fecal coliform bacteria levels should not exceed 200 orgs/100ml based on at least five samples in a 30-day period. In addition, not more than 10% of the total samples taken during any 30-day period should have a density that exceeds 400 orgs/100 ml. None of the nine 30-day periods during summer 1999 had geometric means (N = 5 samples per period) greater than 200 orgs/100ml.; the maximum 30-day geometric means were 18 orgs/100ml at Clear Lake beach and 85 orgs/100 ml at McIntosh Woods beach. None of the 14 samples at either beach exceeded the EPA-recommended single sample maximum density for fecal coliform bacteria of 400 orgs/100ml. The assessment of the Class A uses as "threatened" remains based on reports of algal blooms and related aesthetic problems as described in the assessment developed for the 1998 report (see above). The Class B(LW) aquatic life uses were assessed as "fully supporting / threatened" based on review of the previous (1998) assessments by the DNR Fisheries Bureau in 2000. The Class C (drinking water uses remained "not assessed" due to lack of relevant water quality information. Fish consumption uses were previously assessed as fully supported (=FS) based on results of EPA/DNR fish tissue (RAFT) monitoring in 1993 (see above) Results of this monitoring are now considered too old (greater than five years) to assess the current levels of contaminants in fish. Thus, the assessment of fish consumption uses was changed from "fully supporting" to "not assessed."

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Lakes, Wetlands, and Flood Control Reservoirs: CERRO GORDO

Clear Lake Marsh

Cerro Gordo County, S6,T96N,R21W, at N edge of Clear Lake

LAKE SIZE: 41 Acres

Waterbody ID No.: IA 02-WIN-00370-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, comments of DNR Wildlife biologist indicate that the flow diversion structure is not functioning properly and poor hydrological characteristics are contributing to poor wetland quality. B(LW) uses support downgraded to NS.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lekwa Marsh

Cerro Gordo County, S26,T96N,R22W, S edge of Clear Lake.

LAKE SIZE: 32 Acres

Waterbody ID No.: IA 02-WIN-00455-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with siltation from agricultural nonpoint sources threatening continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FST).

For the 1998 report, comments of DNR Wildlife biologist were used to assign causes and sources of FST classification.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: CERRO GORDO

McIntosh Wildlife Area

Cerro Gordo County, S16,T96N,R22, E edge of Ventura.

LAKE SIZE: 22 Acres

Waterbody ID No.: IA 02-WIN-00460-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assess as FS.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FS).

For the 1998 report, assessments for developed for the 1994 and 1996 reports were reviewed and approved by the DNR Wildlife Bureau. Thus, the Class B(LW) wetland uses remain assessed as FS.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Ventura Marsh

Cerro Gordo County, S19,T96N,R22W, at Ventura.

LAKE SIZE: 225 Acres

Waterbody ID No.: IA 02-WIN-00465-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, comments of DNR Wildlife Biologist indicate that, in addition to siltation, nutrients from agricultural sources also contribute to PS use status.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: CERRO GORDO

Wild Goose Slough

Cerro Gordo County, S29,T97N,R22W, 4 mi N of Ventura.

LAKE SIZE: 50 Acres

Waterbody ID No.: IA-WETLAND-04

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For 1998 report, comments of DNR Wildlife Biologist indicate road construction was responsible for altering the water level and impairing the quality of the wetland. The use support status would be PS if the wetland was designated for B(LW) uses.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: CLARKE CO

East Lake (Osceola)

Clarke County, S16,T72N,R25W, 0.5 mi E of Osceola.

LAKE SIZE: 14 Acres

Waterbody ID No.: IA 04-LDM-02190-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recre)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Assessment from the 1992 report (PS) was changed to FST for the 1994 report for the following reasons: (1) DNR Fisheries believe uses at the lake are FST, (2) results of monitoring in 1990 show that average levels of secchi and TSS are slightly worse than the overall averages for the 116 SPOLs sampled in 1990 and 1992; results, however, also show that levels of total-P and chl-a approach the overall means + 1 SD. Thus, monitoring data suggest that water quality is below average but within acceptable limits for SPOLs in Iowa (i.e., within 1 SD from the overall SPOL means). Although designated for swimmable uses, lake does not have a swimming beach, and Bachmann et al. (1994) report swimming. Fishable uses threatened by sediment and nutrients from ag NPSP.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: CLARKE CO

West Lake (Osceola)

Clarke County, S13,T72N,R26W, approx 2 mi W of Osceola.

LAKE SIZE: 337 Acres

Waterbody ID No.: IA 04-LDM-02690-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys of the DNR Fisheries Bureau (2) results of a 1995 UHL survey of Iowa water supply reservoirs and (3) the 1998 "Iowa Voluntary Atrazine Monitoring Program." See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Drinking Water Supply	-- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

Results of ISU monitoring in 1992 show that the average level of secchi depth is at the overall mean for the 116 SPOLs sampled in 1990 and 1992; that average levels of chl-a and total-P are better than overall means but are within 1 SD better than the overall means. Thus, these data suggest that the lake has better than average water quality for Iowa SPOLs. Both sed rate & life expect are much better than average for SPO impoundments. Mon. in 90 by Miller & Kennedy (1991: 56) showed that levels of atrazine and alachlor exceeded MCLs; thus lake was assessed as PS in 92. Winter sampling of WS res. in 93 showed that levels of pests in water were << MCLs, but that levels in sediment near the dam were rel. high (Miller & Kennedy 1993: 52). Monitoring in March 1992 also showed levels of atrazine & alachlor < MCLs. Mon by DuPont in 1993 showed return of high levels of atrazine & cyanazine; activated charcoal filter installed at WTP.

For 1996 report, used assessments of support for the Class B(LW) aquatic life uses developed for the 1994 report (=FST). Used previous information on levels of pesticides in lake water in combination with results of sampling conducted in February 1995 as part of a survey of 19 water supply reservoirs (Miller and Kennedy 1995) to continue to assess support of the Class C (drinking water) uses as PS due to (1) levels of atrazine near the dam (2.2 to 2.4 ug/l) higher than the average reportable concentration for the 19 WS reservoirs, (2) levels of cyanazine (4.3 to 4.7 ug/l) approx four times the average reportable concentration (1.03 ug/l), and (3) the highest sediment concentrations of atrazine (21 ug/kg) and cyanazine (33 ug/kg) in the study. Previous studies (especially Kalkhoff 1993, in combination with Miller and Kennedy 1993 and 1995) suggest that spring/summer levels of atrazine may exceed the MCL of 3.0 ug/l.

For the 1998 report, the assessment of support of the Class B(LW) aquatic life uses (FST) was reviewed and approved by the DNR Fisheries Bureau. The assessment of support of the Class C (drinking water) uses was reviewed and upgraded from PS to FST. Average levels of atrazine are below the MCL; thus, the Class C uses were assessed as FST.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses remain assessed as "fully supported / threatened." The Class C (drinking water) uses were assessed as "not supported." Fish consumption uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses was reviewed and approved by the DNR Fisheries Bureau in 2000. The assessment of support of the Class C (drinking water) uses as "not supported" was based on the the 1998 results of the Novartis "Iowa Voluntary Atrazine Monitoring Program." This monitoring showed that the time-weighted mean level of atrazine in samples collected from the Osceola raw water source from January to December 1998 (3.7 ug/l, N=30, maximum=7.3 ug/l) was above the MCL of 3.0 ug/l. Based on DNR's Section 305(b) assessment methodology, if the average contaminant level in source water is greater than the MCL, the Class C (drinking water) uses of the source water should be assessed as "not supported." Thus, the Class C uses of West Lake Osceola were assessed as "not supported." The high levels of atrazine in West Lake Osceola suggest that this lake should remain on Iowa's Section 303(d) list of impaired waters. Fish consumption uses remained "not assessed" due to lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: CLAY CO

Barringer Slough

Clay County, S14,T96N,R35W, 4 mi ENE of Dickens.

LAKE SIZE: 778 Acres

Waterbody ID No.: IA 06-LSR-02350-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with high levels of nutrients delivered to the slough in agricultural nonpoint source runoff threatening continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, DNR Wildlife Biologist comments indicate that silt delivered to the wetland in agricultural nonpoint source runoff is also a threat to continued support of B(LW) use.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Dan Greene Slough

Clay County, S20,T97N,R35W, 5 mi N of Dickens.

LAKE SIZE: 311 Acres

Waterbody ID No.: IA 06-LSR-02420-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST with high levels of nutrients delivered to the wetland in agricultural nonpoint source runoff threatening continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, continue to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FST). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: CLAY CO

Dewey's Pasture

Clay County, S25,T97N,R35W, 7 mi. NE of Dickens.

LAKE SIZE: 700 Acres

Waterbody ID No.: IA-WETLAND-06

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland receives little runoff from agricultural nonpoint sources and would support full attainment of B(LW) use, should the wetland receive that use designation in the future.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of aquatic life uses ("fully supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Elk Lake

Clay County, S36,T96N,R35W, 6 mi SE of Dickens.

LAKE SIZE: 261 Acres

Waterbody ID No.: IA 06-LSR-02325-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LR) aquatic life uses was assessed as FST with siltation from agricultural nonpoint sources threatening continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1992 and 1994 reports (=FST).

For the 1998 report, DNR Wildlife Biologist comments indicate that nutrients from agricultural nonpoint sources also are a threat to continued support of B(LW) use.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: CLAY CO

Round Lake

Clay County, S34,T97N,R35W, 4 mi. NE of Dickens.

LAKE SIZE: 430 Acres

Waterbody ID No.: IA-WETLAND-07

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For 1998 report, comments of DNR Wildlife Biologist indicate water quality of the wetland is threatened by unspecified nutrient inputs. Thus, consider the aquatic life uses of this wetland as fully supported/threatened.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Trumbull Lake

Clay County, S27,T97N,R35W, 5 mi NE of Dickens.

LAKE SIZE: 1183 Acres

Waterbody ID No.: IA 06-LSR-02450-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Assessed as FST for the 1992 report.

For the 1994 report: Assessed as PS for the following reasons: (1) results of monitoring in 1990 show that average levels of secchi depth, total-P, chl-a, and (especially) TSS are worse than overall averages for the 116 SPOLs sampled in 1990 and 1992 +/- 1 SD; i.e., water quality of this lake is poorer than approximately two-thirds of the SPOLs in Iowa; levels of chl-a and TSS were some of the highest in the 1990-1992 data set for Iowa SPOLs; (2) Clean Lakes Classification study (Bachmann et al. 1994) states that the lake winterkills 7 out of 50 years and that 70% of the lake is covered with aquatic vegetation; (3) lake has rel high sed rate (1.4 cm/yr) and rel short life expect (64 years) for a natural SPOL; (4) level of swimming use reported by Bachmann et al. (1994) is very low, thus suggesting impairment. Secchi, total-P, chl-a, TSS, & swim use were in poorest 10% of Iowa natural (SPOL) lakes.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=NS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, changed the assessment of overall support for the Class A primary contact recreation uses from "not supporting" to "partially supporting at the recommendatin of the DNR Fisheries Bureau. DNR Fisheries indicated that the water quality impairments and WQ trend previously identified for this lake (i.e., organic enrichment, nutrients, and aquatic plants due to natural shallowness and internal nutrient cycling, with a stable water quality trend) remain accurate.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were changed from "partially supporting" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: CLAY CO

Wapiti Marsh

Clay County, S1,T95N,R35W, 6 mi. SE of Dickens.

LAKE SIZE: 230 Acres

Waterbody ID No.: IA-WETLAND-08

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For 1998 report, comments of DNR Wildlife Biologist indicate the wetland is adversely impacted by hydrological modifications. Thus, consider the aquatic life uses of this wetland to be partially supported.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: CLINTON CO

Goose Lake

Clinton County, S29,T83N,R4E, 1 mi. W of Goose Lake.

LAKE SIZE: 447 Acres

Waterbody ID No.: IA 01-MAQ-01160-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Wildlife Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for either the 1994, 1996, or 1998 reports.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses were assessed as "partially supported." EXPLANATION: Based on the recommendation from the DNR Wildlife Bureau, the support of the Class B(LW) aquatic life of this wetland was assessed as "partially supported." The cause of impairment was identified as siltation related to drainage ditching.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: CRAWFORD CO

Nelson Park Lake

Crawford County, S2,T82N,R41W, 4 mi. WNW of Dow City.

LAKE SIZE: 10 Acres

Waterbody ID No.: IA 06-BOY-00267-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Assessment was changed from PS in the 1992 report to FST for the 1994 report for the following reasons: (1) DNR Fisheries recommended the assessment of FST; (2) results of ISU monitoring in 1990 show that average levels of chl-a, total-P, secchi depth, and TSS are much better than overall averages for the 116 SPOLs sampled in 1990 and 1992. Bachmann et al. (1994) state that the lake's estimated winterkill frequency is once in 10 years, thus suggesting a threat to support of fishable uses. Lake has very high sedimentation rate (7.8 cm/yr) and very short life expectancy (34 years) compared to other SPO impoundments. Level of swimming use reported by Bachmann et al. (1994) is relatively high for this small (10.1 acre) SPOL. High sed. rate and short life expect suggest an immediate threat from sediment delivered to the lake in ag NPSF.

For the 1996 report, used assessment of support of the Class A primary body contact recreation uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses are assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: CRAWFORD CO

Yellow Smoke Park Lake

Crawford County, S6,T83N,R38W, 2 mi NE of Denison.

LAKE SIZE: 29 Acres

Waterbody ID No.: IA 06-BOY-00510-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys by the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Assessment not changed from PS in the 1992 report for the 1994 report for the following reasons*: (1) results of ISU monitoring in 1992 show that average levels of secchi depth, chl-a, total-P, and TSS are much better than overall averages for the 116 SPOLs sampled in 1990 and 1992; (2) winterkill frequency for the lake is estimated to be zero (Bachmann et al. (1994); (3) level of use for swimming reported by Bachmann et al. in highest 10% of the 61 SPO impoundments with levels of swimm use > zero. Lake has relatively high sedimentation rate (5.2 cm/yr) and relatively short life expectancy (66 years), thus suggesting an immediate threat to support of uses from sediment delivered to the lake in agricultural NPS pollution. *DNR Fisheries believes that lake is impacted by siltation from AG NPS; thus, despite > average WQ, assessed as PS.

For the 1996 report, used assessment of the support of the Class A (primary body contact recreation) (=FST) and Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses are assessed as FST while the Class B(LW) aquatic life uses are assessed as PS due to siltation impacts primarily from agricultural nonpoint sources. At the recommendation of the DNR Fisheries Bureau, this lake was placed on the 1998 list of Section 303(d) waters.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(LW) aquatic life uses remain assessed as "partially supported." Fish consumption uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses remain "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The previous (1998, see above) assessment of support of the Class B(LW) uses was reviewed and approved by the DNR Fisheries Bureau in 2000. Staff of the Crawford County Conservation Board, however, called DNR in 1999 to voice their disagreement on the "impaired" assessment for this waterbody; they feel that this lake has good water quality and supports all of its designated beneficial uses [see also assessment developed for the 1994 report above]. Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: DALLAS CO

Beaver Lake

Dallas County, S20,T78N,R29W, 1.5 mi. N of Dexter.

LAKE SIZE: 35 Acres

Waterbody ID No.: IA 04-RAC-01750-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

This recently-impounded lake has not yet been designated for beneficial uses in the Iowa water quality standards; reports of use for fishing and swimming in Bachmann et al. (1994) suggest designation as A, B(LW).

Fishable use was assessed as FS for the 1992 report.

For the 1994 report: Both fishable and swimmable uses were assessed as FS for the following reasons: (1) BPJ of DNR Fisheries; (2) average levels of secchi depth, chl-a, TSS, and total-P were better than overall averages for the 86 SPO impoundments sampled in 1990 and 1992; all were within +/- 1 SD; (3) lake does not have problems with fishkills or aquatic veg.; (4) levels of use for fishing and swimming reported by Bachmann et al. (1994) are relatively low (especially for swimming), but newness of lake and development as a wildlife mgmt area may limit swimming uses.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FS) and the Class B(LW) aquatic life uses (=FS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as FS.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: DAVIS CO

Lake Fisher

Davis County, S19,T69N,R13W, 2 miles NW of Bloomfield.

LAKE SIZE: 110 Acres

Waterbody ID No.: IA 04-FOX-00165-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of a 1995 UHL survey of water supply reservoirs. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Not assessed	Drinking Water Supply	-- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for 1994 report.

For 1996 report, used results of sampling at two locations in January 1995 for 8 common agricultural herbicides and 2 atrazine metabolites as summarized by Miller and Kennedy (1995) to assess support of the Class C (drinking water) uses as FST due to (1) levels of the herbicides detected (atrazine and cyanazine) were below (approx 1/2) the MCL for atrazine, (2) levels of atrazine (0.82 to 1.1 ug/l inlet/dam) and cyanazine (0.87 to 2.3 ug/l inlet/dam) were generally similar to the average reportable concentration for the 19 lakes sampled.

For the 1998 report, continued to use the assessment of support of the Class C (drinking water) uses developed for the 1996 report (=FST). Based on comments from the Des Moines Water Works (L.D. McMullen, personal communication), problems apparently exist with location of the drinking water intake at this lake, with lake stratification causing poor quality water to be withdrawn for treatment.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses remain "not assessed." The Class C (drinking water) uses remain assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class B(LW) remain "not assessed" due to the lack of recent information on the status of aquatic life at this lake. The assessment of support of the Class C (drinking water) uses remains based on the UHL survey of water supply reservoirs in 1995 (Miller and Kennedy 1995) (see assessment developed for the 1996 report above). Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: DAVIS CO

Lake Wapello

Davis County, S34,T70N,R15, 7 mi. W of Drakesville.

LAKE SIZE: 289 Acres

Waterbody ID No.: IA 04-LDM-00995-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Assessment as PS in 1992 report was changed to FST for the 1994 report for the following reasons: (1) DNR Fisheries assessed the lake as FST; (2) results of monitoring in 1990 show that average levels of secchi depth, chl-a, total-P, and TSS are at or better than overall averages for the 116 SPOLs sampled in 1990 and 1992, (3) relatively low sedimentation rate (1.2 cm/yr); (4) lake life estimated at > 100 years, (5) no problems with fishkills, and (6) 90 % of watershed in approved SC practices; (5) levels of use for swimming and fishing as reported by Bachmann et al. (1994) relatively high for SPO impoundment. DSC (1991) reports relatively good WQ with rel low levels of nutrients; fishery was damaged by introduction of gizzard shad in 1981 and lake is to be renovated when funds are available; the only NPSP problem is sheet and rill erosion on cropland.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments of support developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: **DECATUR CO**

Lake LeShane

Decatur County, S4,T67N,R27W, 2 mi. WNW of Lamoni.

LAKE SIZE: 75 Acres

Waterbody ID No.: IA 05-GRA-01560-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of the "Iowa Voluntary Atrazine Monitoring Program" for 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Threatened		

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses, the Class B(LW) aquatic life uses, and the fish consumption uses remain "not assessed." The Class C (drinking water) uses were assessed as "fully supported / threatened." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed" due to a lack of information on levels of indicator bacteria at this lake. The Class B(LW) uses were not assessed due to a lack of information on the aquatic communities of this lake. The Class C (drinking water) uses were assessed as "fully supported / threatened" based on the 1998 results of the Novartis "Iowa Voluntary Atrazine Monitoring Program." This monitoring showed that the time-weighted mean level of atrazine in samples collected from January to December 1998 (2.3 ug/l, N=13, maximum=5.9 ug/l) was below the MCL of 3.0 ug/l. Based on DNR's Section 305(b) assessment methodology, if the average contaminant level in source water is less than the MCL, but a level in one or more samples is above the MCL, the Class C (drinking water) uses of the source water should be assessed as "fully supported / threatened." Thus, the Class C uses of Lake LeShane were assessed as "fully supported / threatened." Fish consumption uses were "not assessed due to the lack of fish contaminant monitoring at this lake."

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Lakes, Wetlands, and Flood Control Reservoirs: DECATUR CO

Little River Watershed Lake

Decatur County, S19,T69N,R25W, approx 2 mi NW of Leon.

LAKE SIZE: 799 Acres

Waterbody ID No.: IA 05-GRA-00810-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys by DNR Fisheries Bureau, (2) results of the "Iowa Voluntary Atrazine Monitoring Program in 1998 and (3) results of the 1995 UHL survey of water supply reservoirs, and (4) fish tissue monitoring in 1994. See attached.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

Assessment in the 1992 report (PS) was changed to FS for the 1994 report for the following reasons: (1) DNR Fisheries assessed the lake as FST, (2) results of monitoring in 1992 show that average levels of secchi depth, total-P, chl-a, and TSS are at or better than overall averages for the 116 SPOLs sampled in 1990 and 1992, (3) relatively low sedimentation rate (0.8 cm/yr) and relatively long estimated life (481 years), (4) no problems with fishkills, and (5) 80 % of watershed in approved SC practices; (6) levels of use for fishing and swimming reported by Bachmann et al. (1994) are relatively high for SPO impoundments in Iowa. Low sed. rate and long life expect. suggest no threat from NPSP. Lake not desig as Class C but is primary WS for Leon. Monitored in Feb 93 for 7 ag herbicides. Only rel low level of atrazine in water (0.14 & 0.12 ug/l) were detected. Additional monitoring needed during summer.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FS) and Class B(LW) aquatic life uses (=FS) developed for the 1994 report. To assess support of the Class C (drinking water) uses, used assessment developed for the 1994 report (=FS) in combination with results of the January 1995 sampling for eight common agricultural herbicides as reported in Miller and Kennedy (1995) to assess support of the Class C uses as FS due to (1) levels of atrazine in the lake (0.54 ug/l) less than the average reportable concentration (0.84 ug/l) for the 19 water supply reservoirs sampled, (0.76 ug/l also less than the average reportable concentration (1.03 ug/l) and (2) no violations of the atrazine MCL. Fish consumption uses assessed as FS due to levels of all contam. less than 1/2 FDA action levels in composite samples of channel cat and w. crappie analyzed for the 1994 RAFT program.

For the 1998 report, used assessments of support of the Class A drinking water uses (=FS), Class B(LW) aquatic life uses (=FS), and Class C drinking water uses (=FS) developed for the 1994 and 1996 reports. The March/April 1998 Iowa Conservationist notes that Little River Lake provides good to excellent fishing for bluegill, bullheads, largemouth bass, walleye/saugeye, channel catfish, and crappie.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were considered "not assessed." The Class B(LW) aquatic life uses, the Class C (drinking water) uses, and the fish consumption uses all remain assessed as "fully supported." EXPLANATION: The Class A (primary contact recreation) uses were considered "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The previous assessment of support of the Class B(LW) uses ("fully supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. The assessment of support of the Class C (drinking water) uses was based on (1) the UHL survey of water supply reservoirs in 1995 (Miller and Kennedy 1995) (see assessment developed for the 1996 report above) and (2) the 1998 results of the Novartis "Iowa Voluntary Atrazine Monitoring Program." This monitoring showed that the time-weighted mean level of atrazine in samples collected from the Leon raw water source from January to December 1998 (1.3 ug/l, N=30, maximum=2.2 ug/l) was below the MCL of 3.0 ug/l. According to DNR's Section 305(b) assessment methodology, average and maximum contaminant levels below MCLs suggest "full support" of drinking water uses. Fish consumption used remained assessed as "fully supported" based on results of the EPA/DNR fish tissue (RAFT) monitoring in 1994 (see assessment for the 1996 report above).

Lakes, Wetlands, and Flood Control Reservoirs: DECATUR CO

Nine Eagles Lake

Decatur County, S18,T67N,R25W, 3.5 mi. SE of Davis City.

LAKE SIZE: 63 Acres

Waterbody ID No.: IA 05-GRA-01010-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys conducted by the DNR Fisheries Bureau and (2) results of DNR/Parks beach monitoring in 1999. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Partial
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Assessment in the 1992 report (PS) NOT CHANGED for the 94 report upon recommend of DNR Fisheries (gully eros./turbidity problems). Mon in 1990 shows that avg levcs of secchi depth, total-P, chl-a, and TSS are at or better than overall averages for the 116 SPOs sampled in 1990 and 1992, (2) DNR Fisheries assessed the lake as FST, (3) lake does not have problems with fishkills, (4) 100% of watershed in approved SC practices, (5) relatively low sedimentation rate (2.1 cm/yr) and relatively long estimated life (204 years) for SPO impoundments in Iowa; (6) levels of use for fishing and swimming reported by Bachmann et al. (1994) are typical for SPO impoundments. DSC (1991) reports that parkland covers approx 90% of the WS, with only 0.7% classified as crop- land; thus, sedimentation rate is very low; problem with gully erosion controlled w/ sedimentation dikes. Experimental destrat in alt years has improved year class strength and fishing success.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as PS due to excessive turbidity from natural sources.

For the 2000 report: SUMMARY: Assessed support of the Class A (primary contact recreation) uses as "partially supported." The Class B(LW) aquatic life uses remained assessed as "partially supporting." Fish consumption uses remain "not assessed." EXPLANATION: Levels of indicator bacteria at Nine Eagles beach were monitored approximately twice per week during summer 1999 by DNR Parks, Recreation and Preserves Division as part of a beach monitoring program at 11 state-owned lakes. Results of the 34 samples collected at Nine Eagles beach showed that levels of indicator bacteria (fecal coliforms) were generally low, with the overall geometric mean (40 orgs/100 ml) well below the state WQ criterion of 200 orgs/100 ml. According to U.S. EPA guidelines for determining "full support" of primary contact uses (U.S. EPA 1997b, page 3-35), the geometric mean of fecal coliform bacteria levels should not exceed 200 orgs/100ml based on at least five samples in a 30-day period. In addition, not more than 10% of the total samples taken during any 30-day period should have a density that exceeds 400 orgs/100 ml. None of the sixteen 30-day periods had geometric means (N = from 6 to 10 samples per period) greater than 200 orgs/100ml.; the maximum 30-day geometric mean was 151 orgs/100ml. The maximum level of fecal coliforms in the 34 samples was 3,600 orgs/100 ml on June 22, 1999; this was one of two samples that exceeded the EPA-recommended single sample maximum density for fecal coliform bacteria of 400 orgs/100ml (the sample collected on July 27, 1999, contained 470 orgs/100 ml). Two of the eight 30-day periods that contained one or the other of these samples had more than 10% of samples with greater than 400 orgs/100 ml. During the 30-day period from June 1 to June 30, 12.5% of the samples (one sample) exceeded the 400 orgs/100 ml criterion. During the 30-day period from June 7 to July 7, 11% of the samples (one sample) exceeded this criterion. Thus, due to the occurrence of a 30-day period with more than 10% of samples exceeding 400 orgs/100 ml, the Class A (primary contact recreation) uses were assessed as "partially supported." The high levels of indicator bacteria in the two samples at Nine Eagles beach are likely related to the elevated levels of indicator bacteria that occur during and after rainfall runoff events. The Class B(LW) aquatic life uses remain assessed as "partially supporting" based on review and approval of the previous (1998) assessment (see above) by the DNR Fisheries Bureau in 2000. Fish consumption uses remained "not assessed" due to the lack of fish tissue monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: DECATUR CO

Slip Bluff Lake

Decatur County, S28,T68N,R26W, 2 mi. NW of Davis City.

LAKE SIZE: 16 Acres

Waterbody ID No.: IA 05-GRA-01015-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Lake was assessed as PS for the 1992 report and the 1994 report for the following reason: lake has long periods of turbid water due to suspended clays (Bachmann et al. 1994). Based on results of monitoring in 1990, however, lake appears to have relatively good water quality; e.g., mean levels of secchi depth, chl-a, total-P, and TSS are within the range of the overall means of the 116 SPOLs sampled in 1990 and 1992 +/- 1 SD. Although designated for swimmable uses, the lake does not have a swimming beach, and Bachmann et al. report swimming use as zero; thus, swimmable use not assessed. Lake has typical sedimentation rate (2.5 cm/yr) and better than typical life expectancy for a SPO impoundment. In addition, only 38% of the WS is in cropland. Thus, high periods of turbidity is likely due to unusual soil type or to nuisance fish species. DNR fishing forecast for 94 notes crappie and CCAT for this lake.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses remain "not assessed," and the Class B(LW) aquatic life uses remain assessed as PS due to siltation primarily from natural sources.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(LW) (aquatic life) uses remain "partially supported." Fish consumption uses were "not assessed." EXPLANATION: The Class A uses remain "not assessed due (1) to the lack of information on levels of indicator bacteria at this lake and (2) presumed lack of swimming uses at this lake (see above). The Class B(LW) uses remain assessed as "partially supported" due to the chronic turbidity problems at this lake as reported by Bachmann (1994) (see assessment for the 1992-94 reports above). The previous identification of "siltation and nutrients" as causes of impairment at this lake were based on the generalized assessment approach for all Iowa waterbodies used for Iowa's 1992 305(b) report. The lake-specific information on chronic turbidity and its causes (suspended clays / soil type) from Bachmann et al. (1994) is more appropriate for the identification of causes and sources of impairment at this lake. Fish consumption uses were not assessed due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: DELAWARE CO

Silver Lake

Delaware County, S16,T88N,R4W, SE edge of Delhi.

LAKE SIZE: 34 Acres

Waterbody ID No.: IA 01-MAQ-00680-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) results of WQ monitoring as part of Univ. of Northern Iowa lake project, (2) results of fish tissue (RAFT) monitoring in 1999, and (3) surveys by DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Not supporting
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Lake assessed as PS for the 1992 report and for the 1994 report for the following reasons: (1) DNR field staff assessed the lake as PS due to impacts from nutrient and sediment, (2) results of monitoring in 1990 show that mean levels of total-P and chl-a are worse than overall means of 116 SPOLs sampled in 1990 and 1992 + 1 SD, thus suggesting a nutrient enrichment problem, and (3) lake has winterkill frequency estimated at nearly 15%. Although designated for swimmable uses, lake does not have a swimming beach, and Bachmann et al. report swimming use as zero; thus swimmable use not assessed. Lake has a very low sedimentation rate (1.0 cm/yr) and a relatively long life expectancy for an SPO impoundment in Iowa; thus, an NPSF is probably much less of an impairment than is lack of sufficient depth to allow thermal stratification (mean depth = 6').

For 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, as recommended by the DNR Fisheries Bureau, downgraded the level of support of the Class B(LW) aquatic life uses from PS to NS. According to the DNR Fisheries biologist, water quality of this lake has declined over the last ten years due to agricultural and urban nonpoint sources that have led to problems with nuisance growth of aquatic plants. Aquatic life has been severely impaired due to both summer and winter oxygen depletion. Presently, bullheads are the only fish species able to survive.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "partially supported." The Class B(LW) aquatic life uses remain assessed as "not supported." Fish consumption uses are assessed as "fully supported." EXPLANATION: The Class A uses were assessed as "partially supported" based on results of monitoring conducted in 1999 as part of the University of Northern Iowa Summer Lakes Study (report available). This monitoring showed high levels of chlorophyll in the lake, as well as populations of bluegreen algae, thus suggesting an impairment to the Class A uses. Levels of indicator bacteria, however, did not suggest an impairment of the Class A uses. Ninety samples from selected sites on Silver Lake were analyzed for indicator bacteria (fecal coliforms) during a six-week period. Results of this monitoring show that weekly levels were generally below the Iowa water quality criterion of 200 orgs/100 ml. The Class B(LW) uses remain assessed as "not supported" based on results of the University of Northern Iowa Summer Lakes Study that show a phytoplankton community (cyanobacteria dominance), levels of soil erosion, nutrient delivery, and biomass production that suggest impairment of the lake's aquatic life. The only fish species observed during the 1999 study was black bullhead. This study concluded that levels of dissolved oxygen are maintained above state criteria only through year-round use of a lake aeration system. Sources of nutrients delivered to the lake included farmland and the high volume of land-applied liquid manure in the watershed. In addition, the DNR Fisheries Bureau reviewed and approved the previous (1998) assessment of the Class B(LW) aquatic life uses ("not supported"). Results of EPA/DNR fish tissue monitoring (RAFT) in 1999 showed very low levels of very few contaminants in the two composite samples of filets from black bullhead. Of the 23 contaminants analyzed for, only two (mercury and selenium) were found above analytical levels of detection. Thus, because levels of all contaminants were less than 1/2 of the respective FDA action levels and DNR levels of concern, the fish consumption uses were assessed as "fully supported."

Lakes, Wetlands, and Flood Control Reservoirs: **DES MOINES CO**

Allen Green Refuge Marsh

Des Moines County, S29,T72N,R1W, 8 mi. E of Mediapolis.

LAKE SIZE: 55 Acres

Waterbody ID No.: IA 02-ICM-00145-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with high levels of nutrient in agricultural nonpoint source runoff threatening continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, comments of DNR Wildlife Biologist indicate wetland quality is adversely impacted by chronic drying from a drainage ditch that runs adjacent to the wetland. Use support status downgraded from FST to PS.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Big Spirit Lake

Dickinson County, S33,T100N,R36W, at Spirit Lake

LAKE SIZE: 4169 Acres

Waterbody ID No.: IA 06-LSR-02850-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Waterbody not assessed for the 2000 305(b) cycle.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully
Drinking Water Supply	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Assessment based on Bachmann et al. 1994; fishable uses were assessed in 1992 as FST and as FS for the 1994 report for the following reasons: (1) results of monitoring in 1990 show that mean levels of secchi, total-P, chl-a, and TSS were better than overall means for the 116 SPOLs sampled in 1990 and 1992; these data show that Big Spirit has some of the best water quality of any Iowa lake; (2) DNR Fisheries staff believe that both swimmable and fishable uses at the lake are fully supported. Lake was monitored on March 1, 1993 as part of survey of 15 WS reservoirs (Miller and Kennedy 1993). Samples from inlet and deep area contained only low amounts of atrazine; none of the other six herbicides were detected in either water or sediment. Data suggest no problem with herbicides in DW; additional monitoring, however, should be conducted.

For 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=FS) and Class A (primary contact) uses (=FS) developed for the 1994 report. Used information for Big Spirit L. from Miller and Kennedy's (1995) survey of 19 water supply reservoirs to again assess support of the Class C (drinking water) uses as FS due to the finding of only low levels of atrazine in the water and sediment of the lake. Levels of atrazine found were approx. 10 times lower than the MCL.

For the 1998 report, used assessments of support of the Class A primary contact recreation uses (=FS), Class B(LW) aquatic life uses (=FS), and Class C drinking water uses developed for the 1994 and 1996 reports. These assessments were reviewed by the DNR Fisheries Bureau in 1998; no changes in the assessments were recommended. Results of the 1997 DNR/U.S. EPA "RAFT" fish contaminant monitoring program showed that levels of few contaminants detected in the composite samples of fillets from carp and yellow perch were well below 1/2 of the respective FDA action levels and below DNR levels of concern. Thus, assess support of fish consumption uses as FS.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported." Class C (drinking water) uses remain assessed as "fully supported." Fish consumption uses also remain assessed as "fully supported." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change reflects revisions to the DNR's Section 305(b) assessment methodology and does not reflect any changes in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. The Class C drinking water use remained assessed as "fully supporting" based on the assessment developed for the 1996 report (see above). Fish consumption uses remain "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1997 (see assessment developed for the 1998 report above).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Center Lake

Dickinson County, S7,T99N,R36W, 2 mi WSW of Spirit Lake.

LAKE SIZE: 272 Acres

Waterbody ID No.: IA 06-LSR-02890-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Lake was assessed as FST for both the 1992 report and the 1994 report for the following reasons: (1) DNR Fisheries believes that fishable/swimmable uses are FST, (2) results of monitoring in 1990 show that average levels of total-P, chl-a, and TSS are slightly better than overall means for the 116 SPOLs sampled in 1990 and 1992; the average level of secchi depth is slightly worse than the overall mean. All averages were within the overall means +/- 1 SD. Thus, this lake has slightly better than average water quality for SPOLs in Iowa, and (3) lake has relatively low sedimentation rate (0.3 cm/yr) and does not have problems with fishkills. The average to slightly worse than average water quality is likely due to naturally-occurring shallowness that prevents thermal stratification.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For 1998 report, continued to use assessments of support of designated uses developed for the 1994 report (see above). These assessments were reviewed by the DNR Fisheries Bureau in 1998; no changes were recommended.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Center Lake Wildlife Area

Dickinson County, NW1/4 S7,T99N,R36W, 2 mi SW Spirit Lake

LAKE SIZE: 15 Acres

Waterbody ID No.: IA-WETLAND-09

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate housing development on two sides of the wetland are potential sources of urban nonpoint source pollutants that may threaten wetland quality. For purposes of Section 305(b) reporting, consider the aquatic life uses of this wetland as fully supported/threatened, with threats from siltation due to urban nonpoint source runoff.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Christopherson Slough

Dickinson County, S23,T100N,R35W, 3 mi N of Superior.

LAKE SIZE: 171 Acres

Waterbody ID No.: IA-WETLAND-10

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland is impacted by siltation from agricultural nonpoint sources. The wetland use support status would be FST if it was designated as B(LW). For purposes of Section 305(b) reporting, consider the aquatic life uses of this wetland to be fully supported/threatened.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Cory Marsh

Dickinson County, S25,T100N,R38W, 1.5 mi E of Lake Park.

LAKE SIZE: 33 Acres

Waterbody ID No.: IA-WETLAND-11

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Waterbody not assessed for the 2000 305(b) cycle.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate water quality is probably impacted by nutrients from an agric. drainage district that discharges to the wetland. The use support status would be FST if the wetland was designated for B(LW) uses. For purposes of Section 305(b) reporting, consider the aquatic life uses of this wetland to be fully supporting/threatened, with threats from nutrients due to agricultural nonpoint source runoff.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: **DICKINSON CO**

Diamond Lake

Dickinson County, S15,T100N,R37W, 2.5 mi N of Montgomery.

LAKE SIZE: 166 Acres

Waterbody ID No.: IA 06-LSR-03205-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST with high levels of nutrients delivered to the lake in agricultural nonpoint source runoff threatening continued support of this use.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FST). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

East Okoboji Lake

Dickinson County, S29,T99N,R36W, at E edge of Okoboji

LAKE SIZE: 1835 Acres

Waterbody ID No.: IA 06-LSR-02835-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Reer)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report: Assessed as FST for both the 1992 and 1994 reports for the following reasons: (1) BPJ of DNR field staff in 1990 showed swimmable uses FST; no new information; (2) BPJ of DNR Fisheries (1994) agree with FST assessment; (3) results of monitoring in 1990 show that average levels of secchi depth, chl-a, total-P, and TSS are better than overall average levels for the 116 SPOLs sampled in 1990 and 1992; all averages were within the overall means + 1 SD. Lake does, however, have summerkill in approximately 12 percent of years. Average levels of chl-a and total-P in 1990 approach overall averages for the 116 SPOLs, and nutrient enrichment may be occurring; high productivity may also be due to rel. shallow mean depth (3.2 m) and the tendency for the lake not to completely stratify (Bachmann et al. 1994). The few fish contaminants detected in the 1992 RAFT sampling (composite, channel catfish filets) were all less than 1/2 the respective FDA action levels.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST), the Class B(LW) aquatic life uses (=FST), and the fish consumption uses (=FS) developed for the 1994 report.

For the 1998 report, continued to use the assessments of support developed for the 1994 report (see above). These assessments were reviewed in 1998 by the DNR Fisheries Bureau; no changes in the assessments were recommended.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of recent fish contaminant monitoring at this lake. The most recent fish tissue monitoring was conducted in 1992 as part of the EPA/DNR fish tissue (RAFT) monitoring program. The data from this sampling are considered too old (more than five years) for characterizing current water quality conditions.

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Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Garlock Slough

Dickinson County, S35,T99N,R37W, 2.5 mi. NW of Milford.

LAKE SIZE: 90 Acres

Waterbody ID No.: IA 06-LSR-02845-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed.

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FS.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Grover's Marsh

Dickinson County, S12,T100N,R36W, 5 mi NNE of Montgomery.

LAKE SIZE: 100 Acres

Waterbody ID No.: IA 06-LSR-02875-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland is impacted by siltation the probable source of which originates in the Minnesota portion of watershed. Comments indicate that the wetland use support status would be fully supporting-threatened if it was a designated waterbody. For purposes of Section 305(b) reporting, consider the aquatic life uses of this wetland to be fully supported/threatened.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: **DICKINSON CO**

Jemmerson Slough

Dickinson County, S31,T100N,R36W, 1.5 mi. W of Spirit Lake.

LAKE SIZE: 273 Acres

Waterbody ID No.: IA-WETLAND-12

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Waterbody not assessed for the 2000 305(b) cycle.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland use status would be FS if it was designated B(LW). Most of the wetland is now protected by public land ownership. For purposes of Section 305(b) reporting, consider the aquatic life uses of this wetland to be fully supported.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lake Park Pond

Dickinson County, S32,T100N,R38W, near Lake Park.

LAKE SIZE: 5 Acres

Waterbody ID No.: IA 06-LSR-03110-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with siltation from agricultural nonpoint sources threatening continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FST).

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Lily Lake

Dickinson County, S18,T99N,R35W, 5 mi. SE of Orleans.

LAKE SIZE: 100 Acres

Waterbody ID No.: IA 06-LSR-02815-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with siltation from agricultural nonpoint sources threatening the continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, continued to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Little Spirit Lake

Dickinson County, S8,T100N,R36W, 5 mi. NE of Montgomery.

LAKE SIZE: 618 Acres

Waterbody ID No.: IA 06-LSR-02870-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Lake was assessed as FST.

For the 1994 report: Lake was assessed as PS (swimmable uses) & NS (fishable uses) for the following reasons: (1) BPJ of DNR Fisheries (1994); (2) monitoring in 1992 shows that average level of secchi depth is worse than typical for the 23 natural SPOLs sampled in 1990 & 1992; avg levels of total-P, chl-a, and TSS near overall avgs; (3) lake has a winterkill freq. of 17%. Relatively low rate of sedimentation (0.3 cm/yr) suggests moderate/minor impacts from ag runoff; thus, lack of thermal stratification in this relatively shallow natural lake likely leads to relatively poor water quality that impairs uses for swimming and for aquatic life. Assessment based primarily on BPJ of DNR Fish., winterkill frequency, and low secchi depth. (DNR Fisheries considers winterkill frequency of > 1 in 7 years (= 14%) as cause for nonsupport of fishable uses.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=NS) developed for the 1994 report.

For the 1998 report, changed the assessment of overall support of the Class A primary contact recreation uses and the Class B(LW) aquatic life uses of this lake from "not supporting" to "partially supporting" at the recommendation of the DNR Fisheries Bureau. DNR Fisheries indicated that the water quality impairments and trend identified for the lake (i.e., aquatic plants and organic enrichment due to natural shallowness; stable WQ trend) remain accurate.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were changed from "partially supporting" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change reflects a change in DNR's Section 305(b) assessment methodology and does not reflect any known changes in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported ") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Lower Gar Lake

Dickinson County, S32,T99N,R36W, 2 mi. NE of Milford.

LAKE SIZE: 242 Acres

Waterbody ID No.: IA 06-LSR-02805-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Assessed as FST.

For the 1994 report: Swimmable uses were assessed as PS and fishable uses were assessed as PS for the following reasons: (1) results of monitoring in 1990 show that average levels of chl-a is better than the overall averages for the 116 SPOLs sampled in 1990 and 1992; the average levels of secchi depth of secchi depth and TSS are toward the poor end of the overall averages +/- 1 SD; the average level of total-P (0.76 ppm) is one of the highest levels of total-P of the 116 lakes sampled and suggests a problem with organic enrichment. Primary cause of poor water quality is shallowness (mean depth = 1.1m) and resultant resuspension of nutrients and sediment. Lake has low frequency of fishkills. Lake has one of the highest sed rates (2.6 cm/yr) and shortest life expect (41 yrs) of any natural SPOL. Lake has rel low use for fish. & swim.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, continue to use the assessments of support of designated uses developed for the 1994 report (see above). These assessments were reviewed by the DNR Fisheries Bureau in 1998; no changes in the assessments were recommended.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported ") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Marble Lake

Dickinson County, S17,T100N,R36W, 3.5 mi. NE of Montgomery.

LAKE SIZE: 184 Acres

Waterbody ID No.: IA 06-LSR-02855-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody type was changed in II:97 by JRO from "lake" to "wetland" at suggestion of DNR Wildlife Bureau staff.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland is protected by public land ownership and would likely support a FS use status if it was designated for B(LW) uses. For purposes of Section 305(b) reporting, consider the aquatic life uses of this wetland to be fully supported.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

McBreen Marsh

Dickinson County, S22,T100N,R37W, 1.5 mi. N of Montgomery.

LAKE SIZE: 20 Acres

Waterbody ID No.: IA-WETLAND-13

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland is now mostly protected by public land ownership. The use support status would be FS if the wetland was designated. For purposes of Section 305(b) reporting, consider the aquatic life uses of this wetland to be fully supported.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Minnewashta Lake

Dickinson County, S29,T99N,R36W, 2 mi. NNE of Milford.

LAKE SIZE: 118 Acres

Waterbody ID No.: IA 06-LSR-02825-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Assessed as FS (swimmable) and FST (fishable).

For the 1994 report: Assessed as FS (swimmable) and FST (fishable) for the following reasons: (1) BPJ of DNR Fisheries, (2) average levels of secchi depth, total-P, chl-a, and TSS are all better than overall averages for the 116 SPOLs sampled in 1990 and 1992; all parameters are within the overall means +/- 1 SD but TSS and secchi depth tend toward the better end of this range; (3) lake does not have problems with fishkills; (4) lake has relatively low sedimentation rate (0.4 cm/yr) (Bachmann et al. 1994).

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FS) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, used assessments of support of designated uses developed for the 1994 report (see above). These assessments were reviewed by the DNR Fisheries Bureau in 1998; no changes in the assessments were recommended.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were changed from "fully supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in DNR's Section 305(b) methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Pachmayr Marsh

Dickinson County, S13,T99N,R36W, 4 mi SE of Sprirt Lake

LAKE SIZE: 6 Acres

Waterbody ID No.: IA-WETLAND-14

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate most of the wetland is protected by public land ownership and the wetland status would likely be FS if it was designated for B(LW) uses. For purposes of Section 305(b) reporting, consider the aquatic life uses of the wetland to be fully supported.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Pleasant Lake

Dickinson County, S7,T99N,R35W, 5 mi. SE of Orleans.

LAKE SIZE: 77 Acres

Waterbody ID No.: IA 06-LSR-02820-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FS.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FS).

For the 1998 report, comments of DNR Wildlife Biologist indicate siltation from agricultural nonpoint sources and runoff from a new housing development adjacent to the wetland are threatening continued full support of B(LW) uses. Biologist did not, however, recommend downgrading the assessment of support of the Class B(LW) uses from FS to FST.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Prairie Lake

Dickinson County, S23,T99N,R36W, 3.5 mi. SE of Spirit Lake.

LAKE SIZE: 100 Acres

Waterbody ID No.: IA 06-LSR-02810-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FS.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FS).

For the 1998 report, comments of DNR Wildlife Biologist indicate a change in land use adjacent to the wetland (from CRP program to cropland) has made the wetland more susceptible to siltation and other agricultural nonpoint source related impacts. Use support status remains same (=FS).

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Sandbar Slough

Dickinson County, S14,T100N,R36W, 4 mi NE of Orleans.

LAKE SIZE: 30 Acres

Waterbody ID No.: IA 06-LSR-02885-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with siltation from agricultural nonpoint sources threatening continued support of the Class B(LW) uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, comments of DNR Wildlife Biologist indicate nutrients contained in tile outlet to marsh from agricultural drainage district are also a threat to continued full support of B(LW) uses.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Silver Lake

Dickinson County, S28,T100N,R38W, near Lake Park.

LAKE SIZE: 1041 Acres

Waterbody ID No.: IA 06-LSR-03105-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports of IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Assessed as FST (both fishable and swimmable).

For the 1994 report: Both fishable and swimmable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries, (2) results of monitoring in 1990 show that average levels of total-P, chl-a, and TSS are at or slightly better than overall average levels of the 116 SPOLs sampled in 1990 and 1992; level of secchi depth, however, was relatively low (0.4 m), but was within the overall average +/- 1 SD. Assessment in 1992 states that uses are threatened by siltation and nutrients from agriculture and secondarily from unknown toxicity due to urban runoff. Lake was monitored on March 2, 93 at two locations for 7 ag herbicides in water and sediment. No herbicides were detected in water; sediment sample from deep area contained low level of atrazine. Lake water had lowest level of atrazine of the 15 reservoirs sampled; thus, assess DW uses as FS.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and Class B(LW) aquatic life uses (=FST) developed for the 1994 report. Used assessment of the Class C (drinking water) uses developed for the 1994 report (=FS) in combination with results from the February 1995 sampling for eight agricultural herbicides as described by Miller and Kennedy (1995) to assess support of the Class C uses as FS due to (1) atrazine levels (0.3 and 0.4 ug/l deep water/ inlet) that are less than the average reportable concentration for the 19 reservoirs sampled (=0.84 ug/l), (2) cyanazine level (0.3 ug/l, deep water) much less than the average reportable concentration (1.04 ug/l), and (3) no violations of the atrazine MCL.

For the 1998 report, used assessments of support of the Class A primary contact recreation uses (FST), Class B(LW) aquatic life uses (=FST), and the Class C drinking water uses (=FS) developed for the 1994 and 1996 reports. These assessments were reviewed in 1998 by the DNR Fisheries Bureau; no changes in the assessments were recommended.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." The Class C (drinking water) uses remain assessed as "fully supported." Fish consumption were assessed as "fully supported." EXPLANATION: The level of support of Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a changes in the DNR's Section 305(b) assessment methodology and does not reflect any known changes in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Class C (drinking water) uses remained assessed as "fully supported" based on results of water quality monitoring in 1995 (see assessment developed for the 1996 report above). Fish consumption uses were assessed as "fully supported." EPA/DNR fish tissue (RAFT) monitoring in 1999 showed that levels of contaminants in the composite sample of filets from common carp and walleye were less than 1/2 of the respective FDA action levels and DNR levels of concern for organochlorine contaminants and mercury [nearly all contaminants in both samples were below their analytical limits of detection]. Thus, fish consumption uses were assessed as "fully supported."

Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Sunken Lake

Dickinson County, S17,T100N,R36W, approx 4 mi NE Montgomery.

LAKE SIZE: 15 Acres

Waterbody ID No.: IA 06-LSR-02865-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FS.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FS).

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland is periodically used for fish rearing purposes and piscicides are used. These chemicals may be detrimental to non-target aquatic species. Based on the biologist's recommendation, the use support status was changed from FS to FST to reflect potential adverse impacts on the native wetland community.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Swan Lake

Dickinson County, S23,T100N,R35W, 2 mi. N of Superior.

LAKE SIZE: 371 Acres

Waterbody ID No.: IA 04-UDM-01095-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with siltation from agricultural nonpoint sources threatening continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, continue to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FST). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Trickle Slough

Dickinson County, S11,T100N,R36W, 4 mi. NNE of Orleans

LAKE SIZE: 4 Acres

Waterbody ID No.: IA-WETLAND-15

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate a land acquisition project will protect the wetland shoreline under public ownership. The wetland would likely support FS use status if it was designated for B(LW) uses. For purposes of Section 305(b) reporting, consider the aquatic life uses of this wetland to be fully supported.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Upper Gar Lake

Dickinson County, S29,T99N,R36W, at E edge of Arnolds Park.

LAKE SIZE: 36 Acres

Waterbody ID No.: IA 06-LSR-02830-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Assessed as FST (both fishable and swimmable) by DNR field staff (1990).

For the 1994 report: Assessed PS (fishable) and PS (swimmable) for the following reasons: (1) results for monitoring in 1990 show that averages of secchi depth, and TSS were better than overall averages for the 116 SPOLs sampled in 1990 and 1992; average levels of chl-a and total-P, however, were poorer than the overall averages with chl-a approaching the overall mean + 1 SD, thus suggesting a nutrient enrichment problem probably due to lack of sufficient depth to allow thermal stratification. Large populations of phytoplankton would make the lake less appealing to swimmers. Lack of problems with fish kills suggests that fishable uses are supported. Sed. rate (1.8 cm/yr) and life expectancy (58 yrs) are in the worst 10% for natural SPOLs in Iowa. Levels of use for fish. & swim. reported by Bachmann et al. (1994) are rel. low for nat SPOLs.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, continued to use assessments of support of designated uses developed for the 1994 report (see above). These assessments were reviewed by the DNR Fisheries Bureau in 1998; no changes in the assessments were recommended.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support for the Class A (primary contact recreation) uses was changed from "partially supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Welch Lake

Dickinson County, S23,T100N,R37W, 2 mi. NE of Montgomery.

LAKE SIZE: 75 Acres

Waterbody ID No.: IA 06-LSR-02895-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with high levels of nutrients from agricultural nonpoint sources threatening continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, continue to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FST). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

West Okoboji Lake

Dickinson County, S20,T99N,R36W at NW edge of Arnolds Park.

LAKE SIZE: 3847 Acres

Waterbody ID No.: IA 06-LSR-02840-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on results of (1) DNR/Parks beach monitoring in 1999, (2) surveys of DNR Fisheries Bureau, (3) results of drinking water studies in 1995 & 98, and (4) fish tissue monitoring in 1995. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully
Drinking Water Supply	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Assessment from the 1992 report (FST) was changed to FS for the following reasons: (1) BPJ of DNR Fisheries, (2) results of monitoring in 1990 that show average levels of secchi depth, total-P, chl-a, and TSS are much better than overall averages for SPOLs sampled in 1990 and 1992. Levels of total-P and secchi depth were better than the overall means +/- 1 SD; other parameters were near the upper end of this range. These data show that the lake has some of the best water quality of any of the SPOLs in Iowa. Lake was monitored on March 2, 1993 at the inlet and at deep location for 7 ag herbicides in water and sediment. According to Miller and Kennedy (1993: 53), low levels of atrazine and metolachlor were found in water from the inlet and the deep area. Additional monitoring is necessary to determine levels of herbicides in summer. Because levels of atrazine in water were < 1/2 MCL, DW uses were assessed as FS.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FS) and Class B(LW) aquatic life uses (=FS) developed for the 1994 report. To assess support of the Class C (drinking water) uses, used assessment developed for the 1994 report (=FS) in combination with results from the February 1995 sampling for eight common agricultural herbicides as summarized in Miler and Kennedy 1995. Results show that three herbicides were detected at relatively low levels: atrazine (0.29 to 0.38 ug/l), cyanazine (0.12 to 0.17 ug/l), and simazine (0.2 to 0.23 ug/l). Levels of atrazine and cyanazine were less than one-half the average reportable concentration for the 19 reservoirs sampled, and the levels of atrazine were less than one-half the MCL of 3.0 ug/l. Thus, cont. to assess support of the Class C uses as FS. For 1995 RAFT. levs of all contams in carp & y.perch < 1/2 FDA action levels (=FS).

For the 1998 report, used assessments of support of the Class A primary contact recreation, Class B(LW) aquatic life, Class C drinking water, and fish consumption uses developed for the 1994 and 1996 reports (all uses assessed as fully supporting (=FS)). These assessments were reviewed by the DNR Fisheries Bureau in 1998. The March/April 1998 Iowa Conservationist notes that West Okoboji supports good to excellent angling opportunities for smallmouth bass, yellow perch, muskellunge, and northern pike.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "fully supporting." The Class B(LW) aquatic life uses, the Class C (drinking water) uses, and the fish consumption uses remained assessed as "fully supporting." EXPLANATION: Levels of indicator bacteria at Gull Point beach were monitored approximately twice per week during summer 1999 by DNR Parks, Recreation and Preserves Division as part of a beach monitoring program at 11 state-owned lakes. Results of the 35 samples collected at this beach showed that levels of indicator bacteria (fecal coliforms) were very low compared to other Iowa lakes, with the overall geometric mean (11 orgs/100 ml) well below the state water quality criterion of 200 orgs/100 ml. The maximum level of fecal coliforms in the 34 samples was 30 orgs/100 ml on June 8, 1999; thus, no samples exceeded the Iowa water quality criterion of 200 orgs/100 ml. According to U.S. EPA guidelines for determining "full support" of primary contact uses (U.S. EPA 1997b, page 3-35), the geometric mean of fecal coliform bacteria levels should not exceed 200 orgs/100ml based on at least five samples in a 30-day period. In addition, not more than 10% of the total samples taken during any 30-day period should have a density that exceeds 400 orgs/100 ml. None of the sixteen 30-day periods during summer 1999 had geometric means (N = from 6 to 10 samples per period) greater than the state water quality criterion of 200 orgs/100ml.; the maximum 30-day geometric mean was 13 orgs/100ml. No samples exceeded the EPA-recommended single sample maximum density for fecal coliform bacteria of 400 orgs/100ml. Thus, the Class A (primary contact recreation) uses were assessed as "fully supported." The Class B(LW) aquatic life uses remain assessed as "fully supporting" based on review and approval of the previous (1998) assessments by the DNR Fisheries Bureau in 2000. The Class C drinking water use remained assessed as "fully supporting" based on (1) the assessment developed for the 1996 report (see above) and (2) the 1998 results of the Novartis "Iowa Voluntary Atrazine Monitoring Program." This monitoring showed that the time-weighted mean level of atrazine in samples collected from the Milford raw water source from January to December 1998 (0.1 ug/l, N=31, maximum=0.5 ug/l) was well below the MCL of 3.0 ug/l. Based on DNR's Section 305(b) assessment methodology, if average contaminant levels and maximum values are below the MCL, "full support" of drinking water uses is suggested. Fish consumption uses remained assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1995 that showed levels of all contaminants in the composite sample of filets from carp and yellow perch were less than 1/2 of respective FDA action levels and DNR levels of concern (see assessment for the 1996 report above).

Lakes, Wetlands, and Flood Control Reservoirs: DICKINSON CO

Yager Slough

Dickinson County, S23,T99N,R38W, 5 mi. SSE of Lake Park.

LAKE SIZE: 22 Acres

Waterbody ID No.: IA-WETLAND-16

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments from the DNR Wildlife biologist indicate that the aquatic life uses of this non-designated wetland are fully supported but threatened by high levels of nutrients from agricultural nonpoint sources.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: EMMET CO

Burr Oak Lake

Emmett County, S21,T98N,R33W, 3.5 mi. SE of Wallingford.

LAKE SIZE: 113 Acres

Waterbody ID No.: IA 04-UDM-01055-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of the DNR Wildlife biologist indicate that the aquatic life uses of this wetland are fully supported but threatened due to nutrients from agricultural nonpoint sources.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Fourmile Lake

Emmett County, S18,T99N,R34W, 3.5 mi W of Estherville.

LAKE SIZE: 209 Acres

Waterbody ID No.: IA-WETLAND-17

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of the DNR Wildlife biologist indicate that the aquatic life uses of the wetland are fully supported but are threatened by nutrients from agricultural nonpoint sources.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: EMMET CO

High Lake

Emmett County, S14,T98N,R33W, 4 mi. ESE of Wallingford.

LAKE SIZE: 467 Acres

Waterbody ID No.: IA 04-UDM-03990-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with high levels of nutrients in agricultural nonpoint sources believed to threaten the continued support of these uses. The Class A (primary contact) uses were not assessed.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, continued to use the assessment of support of the Class B(LR) aquatic life uses developed for the 1994 report (=FST). This assessment was reviewed and approved by the DNR Wildlife Bureau. The High Lake and Ingham Lake complex was sampled as part of a three-year water quality project sponsored under CWA Section 319; contact Gary Phillips (Iowa Lake Community College) for more information.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: EMMET CO

Ingham Lake

Emmett County, S12,T98N,R33W, 6 mi E of Wallingford.

LAKE SIZE: 377 Acres

Waterbody ID No.: IA 04-UDM-03985-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report, lake was assessed as FST (Class A & B).

For the 1994 report: Aquatic life (Class B) uses remained FST, but swimmable (Class A) use was assessed as PS for the following reasons: results of monitoring in 1990 show that averages secchi depth, chl-a, and TSS are at, or worse than, the overall averages for the 116 SPOLs sampled in 1990 and 1992 +/- 1 SD; in addition, the average level of total-P is worse than the overall average of the 116 SPOLs. These data suggest that the lake has a problem with high levels sed & nutrients. The lack of major inflows and the lack of complete stratification in summer suggest that the lake is susceptible to wind-related suspension of sediment & nutrients. The low fishkill frequency ("rare if ever") (Bachmann et al. 1994) and moderately high levels of fishing use suggest that fishable uses are supported. Lake is recommend. for crappie fishing in DNR 1994 fishing forecast.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, continued to use assessments of support of designated uses developed for the 1994 report. These assessments were reviewed in 1998 by the DNR Fisheries Bureau; no changes in the assessments were recommended.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were changed from "partially supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Class C (drinking water) uses remain "not assessed" due to lack of information. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: EMMET CO

Iowa Lake

Emmet County, S12,T100N,R31W, 6 mi. N of Armstrong.

LAKE SIZE: 308 Acres

Waterbody ID No.: IA 04-BLU-01000-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Drinking Water Supply	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with high levels of nutrients in agricultural nonpoint sources believed to threaten the continued support of these uses. Class C (drinking water) uses not assessed.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report was reviewed and approved by the DNR Wildlife Bureau. Thus, the Class B(LW) uses remain assessed as FST. No information is available for assessing support of the Class C (drinking water) uses.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: EMMET CO

Tuttle Lake

Emmett County, S14,T100N,R32W, 2 mi. N of Dolliver.

LAKE SIZE: 2360 Acres

Waterbody ID No.: IA 04-EDM-00290-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS by DNR field staff in 1990.

For the 1994 report: Swimmable uses were assessed as PS & fishable uses as NS for the following reasons: (1) BPJ of DNR Fisheries, (2) results of monitoring in 1990 show that averages of secchi depth, chl-a, and TSS are worse than overall averages for the 116 SPOs sampled in 1990 and 1992 +/- 1 SD; the average level of total-P is worse than the overall average but is within 1 SE of the overall mean; (3) lake has relatively high sedimentation rate 1.4 cm/yr for a natural lake; (4) fishkill frequency is 14%. Data from Bachmann et al. (1994) suggest that this lake has a nutrient enrichment problem that is related to lack of sufficient depth to allow thermal stratification. DNR fisheries considers lakes with winterkill frequency > or = 1 in 7 years (14%) as not supporting fishable uses.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=NS) developed for the 1994 report.

For the 1998 report, changed the assessment of overall support of the Class B(LW) aquatic life uses from "not supporting" to "partially supporting" at the recommendation of the DNR Fisheries Bureau. DNR Fisheries indicated that the water quality impairments identified for the lake (aquatic plants and organic enrichment due to natural shallowness and nutrient recycling, with a stable WQ trend) were still accurate.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were changed from "partially supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in DNR's Section 305(b) methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Tuttle Lake Marsh

Emmett County, S13,T100N,R32W, 2 mi. NE of Dolliver.

LAKE SIZE: 45 Acres

Waterbody ID No.: IA-WETLAND-18

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of the DNR Wildlife biologist indicate that the aquatic life uses of this wetland are fully supported but threatened by nutrients from agricultural nonpoint sources.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: EMMET CO

Twelve-Mile Lake

Emmett County, S21,T98N,R34W, 4 mi. SW of Wallingford.

LAKE SIZE: 290 Acres

Waterbody ID No.: IA 04-UDM-01060-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
 Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with high levels of nutrients in agricultural nonpoint source runoff believed to threaten the continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report. This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

West Swan Lake

Emmett County, S31,T99N,R32W, 3 mi. SE of Gruver.

LAKE SIZE: 379 Acres

Waterbody ID No.: IA-WETLAND-19

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Waterbody not assessed for the 2000 305(b) cycle.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
 Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of the DNR Wildlife biologist indicate that the aquatic life uses of this wetland are fully supported/threatened due to nutrients from agricultural nonpoint sources. This wetland is supports a recreational fishery during some years but has a relatively high frequency of winterkills.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: FAYETTE CO

Frog Hollow (aka Volga Lake)

Fayette County, S3,T93N,R8W, 4 mi. NNE of Fayette.

LAKE SIZE: 119 Acres

Waterbody ID No.: IA 01-VOL-00130-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS

For the 1994 report: Assessment was changed to FST [both fishable & swimmable uses] for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1992 show that overall averages for secchi depth, total-P, chl-a, and TSS were better than overall averages from the 116 SPOLs sampled in 1990 and 1992 +/- 1 SD; (3) lake has low fish kill frequency ("infrequent") (Bachmann et al. 1994). Thus lake has better than average water quality for swimming and has physical characteristics to prevent fishkills. Bachmann et al. (1994) show that no swimming use occurs at this lake.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported/threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: FRANKLIN CO

Beeds Lake

Franklin County, S20,T92N,R20W, 2 mi W, 1 mi N of Hampton

LAKE SIZE: 100 Acres

Waterbody ID No.: IA 02-WFC-0090-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Lake was assessed as PS (both fishable & swimmable).

For the 1994 report: Lake was also assessed [both fishable & swimmable uses] as PS for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that the average level of TSS was worse than the overall average of the 116 SPOLs sampled in 1990 and 1992 + 1 SD; in addition, averages of total-P and chl-a tend to approach the poor end of the mean +/- 1 SD. Thus, water quality of this lake appears to be impacted by sediment and nutrients primarily from agriculture. (3) Lake has relatively high sedimentation rate (9.1 cm/yr) and a relatively short estimated life (29 years). According to Bachmann et al. (1994), lake supports considerable swimming, but these uses may be impaired by suspended sediment or phytoplankton-related turbidity.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(WW) aquatic life uses (=PS) developed for the 1994 report. Information from 1994 DNR Iowa Water Quality Project fact sheet supports this assessment: "sediment, nutrients, pesticides, and animal wastes from the 18,966-acre watershed are threatening the quality of this widely-used lake. . . During the last 24 years, the lake has lost 25 acres of surface area because of sedimentation." The current water quality project has goals of reducing sedimentation of Beeds Lake by 70% and implementation of agricultural BMPs in the watershed.

For the 1998 report, used results of fish tissue monitoring for the 1996 Region Ambient Fish Tissue (RAFT) monitoring program to assess support of fish consumption uses as FS: levels of all contaminants in the composite fillet samples of both largemouth bass and channel catfish were below 1/2 of the respective FDA action levels. Continue to use the assessments of support of the Class A primary contact recreation uses and the Class B(WW) aquatic life uses (both=PS) developed for the 1994 report. This assessment was reviewed by the DNR Fisheries Bureau. The DNR Fisheries biologist expects that water quality in this lake will improve due to recent Section 319 nonpoint source control projects. This lake was placed on the 1998 list of Section 303(d) waters at the recommendation of the DNR Fisheries and Water Quality bureaus.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Fish consumption uses remain assessed as "fully supported." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "partially supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake for the 1998-1999 period. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported ") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1996 (see assessment developed for the 1998 report above).

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Lakes, Wetlands, and Flood Control Reservoirs: **FREMONT CO**

Forney Lake

Fremont County, S22,T70N,R43W, 2.5 mi. SSE of Bartlett.

LAKE SIZE: 268 Acres

Waterbody ID No.: IA-WETLAND-20

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Wildlife Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau. Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate extreme water table fluctuations caused by the Missouri River and siltation from agricultural nonpoint sources are adversely impacting this wetland. Biologist recommended that the aquatic life uses be assessed as PS.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses were assessed as "fully supported / threatend." EXPLANATION: Based on a review of the previous (1998) assessment (see above) by the DNR Wildlife Bureau, the support of the Class B(LW) aquatic life uses was changed from "partially supported" to "fully supported / threatened." The primary threat remains flooding-related siltation from agricultural nonpoint sources.

Riverton

Fremont County, S19,T68N,R41W, 1 mi. NW of Riverton.

LAKE SIZE: 900 Acres

Waterbody ID No.: IA-WETLAND-21

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate siltation caused by frequent flooding of the Nishnabotna River is adversely impacting the wetland. Biologist recommended that support of the aquatic life uses of this wetland be assessed as PS.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: FREMONT CO

West Forney's Lake A

Fremont County, S8,T70N,R43W, SW of Bartlett

LAKE SIZE: 10 Acres

Waterbody ID No.: IA 06-WED-00150-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Question exists regarding waterbody type. Waterbody was identified as a wetland in 305(b) reports prior to 1994, but DNR Wildlife (Joens) does not have this pond on the list of publicly-owned wetlands in Iowa. Location is also in question.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1992 and 1994 reports (=FS).

For the 1998 report, continue to use the assessment of support of the Class B(LW) wetland uses developed for previous Section 305(b) reports.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: **GREENE CO**

Spring Lake

Greene County, S25,T84N,R30W, 3 mi NW of Grand Junction.

LAKE SIZE: 49 Acres

Waterbody ID No.: IA 04-RAC-00805-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as FS.

For the 1994 report: Lake does have better than average water quality: monitoring in 1990 shows that averages of secchi depth, chl-a, total-P, and TSS are all better than overall means for the 116 SPOLs sampled in 1990 and 1992; all these averages are near the better end of the overall mean +/- 1 SD. Thus, this lake, despite being relatively shallow and not stratified, has water quality well above average for Iowa's SPOLs. However, the fishable and swimmable uses of this lake were assessed as PS at recommendation of DNR Fisheries that feel the lake is impaired by nuisance growths of rooted aquatic vegetation.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessment developed for the 1996 report was reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain assessed as PS due to excessive growth of rooted aquatic vegetation in this naturally shallow lake.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "partially supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: GUTHRIE CO

Bays Branch

Guthrie County, S22,T80N,R30W, 2 mi. NE of Panora.

LAKE SIZE: 270 Acres

Waterbody ID No.: IA 04-RAC-02085-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, the assessment developed for the 1994 and 1996 reports was reviewed and approved by the DNR Wildlife Bureau. Thus, the Class B(LW) uses remain assessed as PS due to siltation impacts primarily from agricultural nonpoint sources.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: GUTHRIE CO

Springbrook Lake

Guthrie County, S33,T81N,R33W, 6 mi NNE of Guthrie Center.

LAKE SIZE: 14 Acres

Waterbody ID No.: IA 04-RAC-02220-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Lake was assessed as PS (both fishable and swimmable).

For the 1994 report: Lake was assessed as PS fishable and FST swimmable for the 1994 rep based upon recommendation of DNR Fisheries. Fishable uses were assessed as PS for the following reasons: (1) recommendation of DNR Fisheries Bureau and (2) the sedimentation rate (10.8 cm/yr) and life expectancy (24 years) are in the worst 10% of the 86 SPO impoundments in Iowa. Estimates of lake use in Bachmann et al. (1994) show that swimming use is high. Information on water quality and fish kills suggest that lake should support aquatic life uses: averages of secchi depth, chl-a, total-P, and TSS are all much better than overall averages for the 116 SPOs sampled in 1990 and 1992; averages of secchi an total-P are better than the overall means +/- 1 SD. According to Bachmann et al. (1994), the lake does not have a problem with fishkills. Support of uses threatened by sediment delivered to lake in NPS runoff.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class A primary contact recreation uses (=FST) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report. These assessments were reviewed by the DNR Fisheries Bureau. The DNR Fisheries biologist noted that the water quality trend is more toward "declining" than "stable." Due to the continuing water quality related to siltation and nutrients, the DNR Fisheries Bureau recommended that this lake be placed on the 1998 list of Section 303(d) waters.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatend" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: HAMILTON CO

Briggs Woods Lake

Hamilton County, S17,T88N,R25W near Webster City.

LAKE SIZE: 59 Acres

Waterbody ID No.: IA 04-UDM-01880-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on (2) surveys by the DNR Fisheries Bureau and (2) results of fish tissue (RAFT) monitoring in 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as FST for the 1992 report; the same assessments were used for the 1994 report for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that averages of secchi depth, total-P, and TSS are approximately equal to overall averages for the 116 SPOLs sampled in 1990 and 1992; the average level of chl-a is worse than the overall average but is well within 1 SD. (3) according to Bachmann et al. (1994), the lake does not have problems with fishkills, receives heavy use for both fishing and swimming, and has a relatively long life expectancy for a relatively small (59 acres) impoundment.

For the 1996 report, used assessments of support of the Class A primary contact recreation uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report. In addition, used results of fish tissue monitoring conducted for the 1994 RAFT to assess support of fish consumption uses as FS: levels of all contaminants in composite samples of channel catfish and largemouth bass were less than one-half of FDA action levels (=FS).

For the 1998 report, continued to use the assessment of the Class B(LW) aquatic life uses developed for the 1994 and 1996 reports (=FST). Due to changes in assessment methodology for Iowa Section 305(b) reports, changed the assessment from FST to FS due to absence of a declining WQ trend. Continued to assess support of Class A primary contact recreation as FS as in the 1996 report.

For the 2000 report: SUMMARY: The previous assessment of support of the Class A (primary contact recreation) uses was changed from "fully supporting" to "not assessed." Continue to assess support of both the Class B(LW) aquatic life uses and fish consumption uses as "fully supported." EXPLANATION: The level of support of the Class A primary contact uses was changed from "fully supporting" to "not assessed" due to lack of information on indicator bacteria for this lake. The Class B(LW) aquatic life uses were assessed as "fully supporting" based on the review of the previous (1998) assessment in 2000 by the DNR Fisheries Bureau. Fish consumption uses were assessed as "fully supporting" based on EPA/DNR fish tissue (RAFT) monitoring in 1994 that showed that levels of contaminants in composite samples of fillets from channel catfish and largemouth bass were less than one-half of the respective FDA action levels and DNR levels of concern.

Lakes, Wetlands, and Flood Control Reservoirs: HAMILTON CO

Little Wall Lake

Hamilton County, S10,T86N,R24W, 1 mi. S of Jewell

LAKE SIZE: 236 Acres

Waterbody ID No.: IA 03-SSK-00360-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Fisheries Bureau. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report; same assessments were used for the 1994 report for the following reasons: (1) BPJ of DNR Fisheries; (2) Bachmann et al. (1994) report that approx. 80% of the lake is covered by submergent aquatic vegetation; this vegetation could interfere with both fishable and swimmable uses. Monitoring in 1990 suggests that lake water quality is above average for Iowa SPOLS: averages of secchi depth, TSS, and chl-a are better than overall averages for the 116 SPOLS sampled in 1990 and 1992; averages of total-P are within 1 SD (on the poor side) of the overall mean. This natural lake has a very low sedimentation rate (0.1 cm/yr) and thus has a very long life expectancy (876 years). Aquatic vegetation, either planktonic or vascular, impairs uses designated for this lake. Results for fish contam in bullheads all < 1/2 FDA action levels.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS), the Class B(LW) aquatic life uses (=PS), and the fish consumption uses (=FS) developed for the 1994 report.

For the 1998 report, the assessment developed for the 1996 report was reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as PS due to excessive growth of aquatic vegetation in this naturally shallow lake.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remained assessed as "partially supported." Fish consumption uses were assessed as "fully supported." EXPLANATION: The Class A uses remained assessed as "partially supported" based on information from the DNR Fisheries Bureau that heavy blooms of bluegreen algae have occurred in recent years at this lake. The Class B(LW) aquatic life uses remain assessed as "partially supported" based on review and approval of the previous (1998) assessment by the DNR Fisheries Bureau in 2000. The water quality trend for this lake remains "stable." Fish consumption uses were assessed as "fully supported." EPA/DNR fish tissue (RAFT) monitoring conducted in 1998 showed that levels of contaminants in the composite sample of fillets from channel catfish and largemouth bass were less than 1/2 of the respective FDA action levels and DNR levels of concern for organochlorine contaminants and mercury. Thus, fish consumption uses were assessed as "fully supported."

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: HANCOCK CO

Crystal Lake

Hancock County, S15,T97N,R25W, at Crystal Lake.

LAKE SIZE: 268 Acres

Waterbody ID No.: IA 02-IOW-04095-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report; uses were also assessed as PS for the 1994 report for the following reasons: (1) BPJ of DNR Fisheries; (2) average level of total-P (0.424; SE=0.051) is worse than the overall average + 1 SD for the 116 SPOLs sampled in 1990 and 1992 [other WQ parameters (secchi depth, TSS, chl-a), however, have averages near overall means for the 116 SPOLs]; (3) according to Bachmann et al. (1994), the lake winterkills and summerkills once every 10 years; (4) lake is relatively shallow (mean depth = 1.4 m) and is susceptible to resuspension of nutrients and sediment; (5) Bachmann et al. (1994) show that swimming use is relatively low. Thus, both fishable and swimmable uses are impaired by phytoplankton that results in excessive oxygen demands and is aesthetically unpleasing to swimmers.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report. This lake was the first Iowa lake to have a population of eurasian millfoil discovered (1993). According to the March/April 1997 Iowa Conservationist, this infestation has been successfully eradicated.

For the 1998 report, the assessment developed for the 1996 report (above) was reviewed and approved by the DNR Fisheries Bureau. The eurasian millfoil problem remains under control, but planktonic algae remain a serious water quality problem for this relatively shallow natural lake. Water quality problems at this lake are currently being studied by Iowa State University. This lake was placed on the 1998 list of Section 303(d) waters at the recommendation of the DNR Fisheries Bureau.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remained assessed as "partially supported." Fish consumption uses were "not assessed." EXPLANATION: The Class A uses remained assessed as "partially supported" due to information from the DNR Fisheries Bureau that extensive blooms of bluegreen algae during summer months continue to be a water quality problem for this lake. The Class B(LW) aquatic life uses remain assessed as "partially supported" based on review and approval of the previous (1998) assessment by the DNR Fisheries Bureau in 2000. The water quality trend for this lake remains "stable." The fish consumption use remain "not assessed" due to lack of fish tissue monitoring at this lake.

Eagle Lake

Hancock County, S18,T96N,R24W, 3 mi. NE of Britt.

LAKE SIZE: 906 Acres

Waterbody ID No.: IA 02-IOW-04070-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses were assessed as FST, with siltation from agricultural nonpoint sources believed to threaten continued support of these uses.

For 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, comments of DNR Wildlife Biologist indicate nutrients in runoff from livestock confinement operation, in addition to siltation impacts, are the main threats to continued full attainment of B(LW) uses.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: HANCOCK CO

East Twin Lake

Hancock County, S29,T94N,R24W, 3 mi. E of Kanawha.

LAKE SIZE: 193 Acres

Waterbody ID No.: IA 02-IOW-04040-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with siltation from agricultural nonpoint sources believed to threaten the continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 reports (=FST).

For the 1998 report, comments of DNR Wildlife Biologist indicate nutrients in runoff from confined livestock feeding operation, in addition to siltation impacts, are the primary threats to continued full attainment of B(LW) uses.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Eldred Sherwood Lake

Hancock County, S21,T94N,R24W, 3 mi. NE of Goodell.

LAKE SIZE: 21 Acres

Waterbody ID No.: IA 02-IOW-03830-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both fishable & swimmable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) monitoring in 1990 shows that average levels of secchi depth, chl-a, total-P, and TSS are approximately equal to, or slightly better than, overall averages for the 116 SPOs sampled in 1990 and 1992; (3) according to Bachmann et al. (1994), the lake does not have problems with fishkills. Bachmann et al. (1994) also state that the lake has a relatively high sedimentation rate (9.2 cm/yr) and has a relatively short life expectancy (32 years); thus, this lake is threatened by siltation.

For the 1996 report, used assessments of support for the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, continue to assess support of both the Class A (primary contact recreation) and Class B(LW) aquatic life uses as FST, with both support of both uses threatened by siltation.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: HANCOCK CO

West Twin Lake

Hancock County, S30,T94N,R24, 4 mi E of Kanawha.

LAKE SIZE: 109 Acres

Waterbody ID No.: IA 02-IOW-04045-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 & 1994 reports: Support of the Class B(LW) aquatic life uses was assessed as PS due to impacts siltation from from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report.

For the 1998 report, comments of DNR Wildlife Biologist indicate nutrients in runoff from confined livestock feeding operation in the watershed also contribute to degraded water quality and PS use status.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: HARDIN CO

Lower Pine Lake

Hardin County, S4,T87N,R19W, 0.5 mi E of Eldora.

LAKE SIZE: 50 Acres

Waterbody ID No.: IA 02-IOW-0330-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report; both fishable and swimmable uses were assessed as PS for the following reasons: (1) average levels of secchi depth, chl-a, and TSS are better than overall averages for the 86 SPO impoundments sampled in 1990 and 1992; level of total-P, however, is greater than overall average + 1 SD. (2) summer kill frequency est at 10%, (3) Bachmann et al. (1991) report that siltation in Lower Pine L. was a serious problem prior to construction of Upper Pine L.; i.e., est that Lower Pine lost 48% of volume since construct. in 1922. The rel large amount of shallow water in the east half of the lake may explain high levels of total-P, (4) Bachmann et al. (1994) state that "excessive blue-green algae blooms may reduce swimming activity during July and August." Thus, organic enrichment leading to summer kills and excessive algae impair the fishable and swimmable uses; both problems are ultimately related to agricultural NPS.

For 1996 report, used assessments of support of the Class A (prim contact) uses (=PS), and Class B(WW) aquatic life uses (=PS) for 94 rep. An October 1993 DNR report (Hoyman et al. 1993) contains data summaries for WQ monitoring conducted from May 1992 through April 1993, but report does not analyze data or make statements regarding water quality. Review of data does not suggest problems with chemical water quality of Lower Pine Lake.

For the 1998 report, the 1996 assessment was reviewed and approved by the DNR Fisheries Bureau, with nuisance blooms of algae and organic enrichment remaining significant water quality problems at this lake. This lake was placed on the 1998 list of Section 303(d) waters at the recommendation of the DNR Fisheries Bureau. Several water quality problems at Upper and Lower Pine lakes and their watersheds have been evaluated and addressed through the Pine Creek Water Quality Project. For example, through implementation of a variety of soil conservation measures, the amount of soil flowing into these lakes have been reduced by 66 percent. These soil conservation practices include grassed waterways, sedimentation basins, streambank stabilization, and no-till farming.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "partially supported" to "not assessed" due to (1) the lack of information on levels of indicator bacteria at this lake and (2) lack of recent information on algal populations at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: **HARDIN CO**

Upper Pine Lake

Hardin County, S4,T87N,R19W, 0.5 mi E of Eldora.

LAKE SIZE: 69 Acres

Waterbody ID No.: IA 02-IOW-0335-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Fishable uses were assessed as PS and swimmable uses were not assessed for the following reasons: (1) BPJ of DNR staff; (2) the sedimentation rate (7.4 cm/yr) and life expectancy (29 years) are poor for the 86 SPO impoundments sampled in 1990 and 1992; while not in the worst 10%, they suggest an impairment due to ag NPSP; (3) summerkill frequency is 1 in 10 years; (4) although designated for swimmable uses, Bachmann et al. report swimming use as zero (presume that lake is not developed for swimming). Results of monitoring do not suggest impairments: average levels of secchi depth, total-P, and TSS are approx equal to, or better than, overall averages for the 86 SPO impoundments sampled in 1990 and 1992; average level of chl-a is worse than overall average but is w/in 1 SD.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=NAS), Class B(WW) aquatic life uses (=PS), and fish consumption uses (=FS) developed for the 1994 report. An October 1993 DNR report (Hoyman et al. 1993) contained data summaries for WQ monitoring conducted from May 1992 through April 1993, but no analysis of data was performed. Data summaries do not suggest problems with chemical water quality.

For the 1998 report, the assessment developed for the 1996 report (above) was reviewed and approved by the DNR Fisheries Bureau. Several water quality problems in Upper Pine and Lower Pine lakes and their watersheds have been evaluated and addressed through the Pine Creek Water Quality Project. For example, through implementation of a variety of soil conservation measures, the amount of sediment flowing into these lakes has been reduced by 66 percent. These soil conservation practices include grassed waterways, sediment basins, streambank stabilization, and no-till farming.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses remained "not assessed" due to (1) lack of swimming use at this lake (see assessment developed for the 1994 report above) and (2) the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. The level of support of fish consumption uses was changed from "fully supported" to "not assessed" due to the lack of recent fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: HARRISON CO

California Bend

Harrison County, S7,T78N,R45W, 3 mi SW of Modale.

LAKE SIZE: 90 Acres

Waterbody ID No.: IA 06-WEM-00360-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 & 1994 reports: Support of the Class B(LW) aquatic life uses was assessed as NS due primarily to (1) siltation from agricul. nonpoint sources and (2) habitat alterations (lake level destabilization) related to hydrological modification (degradation) of the Missouri River channel.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=NS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=NS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

DeSoto Bend

Harrison County, S21,T78N,R45W, 5 mi. W of Missouri Valley.

LAKE SIZE: 811 Acres

Waterbody ID No.: IA 06-WEM-00340-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Fully Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1992 show that averages of secchi depth, chl-a, total-P, and TSS were either approximately equal to, or better than, overall averages for the 116 SPOLs sampled in 1990 and 1992; (3) according to Bachmann et al. (1994), lake does not have problems with fishkills, has a relatively low sedimentation rate (1.0 cm/yr), and has a relatively long life expectancy (248 years). Bachmann et al. (1994), however, report zero swimming use for this lake. Lake has only a slight threat from sediment delivered to the lake in ag NPS runoff.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Fish consumption uses were assessed as "fully supported." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption were assessed as "fully supported." EPA/DNR fish tissue (RAFT) monitoring conducted in 1998 showed that levels of contaminants in the composite sample of filets from common carp and largemouth bass were less than 1/2 of the respective FDA action levels and DNR levels of concern for organochlorine contaminants and mercury. Thus, fish consumption uses were assessed as "fully supported."

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Lakes, Wetlands, and Flood Control Reservoirs: HARRISON CO

DeSoto Bend Pond

Harrison County, S20,T78N,R45W, 6 mi. W of Missouri Valley.

LAKE SIZE: 4 Acres

Waterbody ID No.: IA 06-WEM-00345-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FS.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Dunlap Pond

Harrison County, S2,T81N,R41W, at E edge of Dunlap.

LAKE SIZE: 9 Acres

Waterbody ID No.: IA 06-BOY-00270-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as NS due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=NS).

For the 1998 report, the DNR Wildlife biologist recommended that the assessment of support of the Class B(LW) aquatic life uses be upgraded from NS to PS, with siltation from agricultural nonpoint sources the primary threat to water quality.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: HARRISON CO

Nobles Lake

Harrison County, S35,T78N,R45W, 6 mi SW of Missouri Valley.

LAKE SIZE: 102 Acres

Waterbody ID No.: IA-WETLAND-30

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, used the recommendation of the DNR Wildlife Bureau to assess support of the aquatic life uses as "not supporting" due to hydrological habitat alterations and due to nonpoint source siltation. This wetland is not yet designated for aquatic life uses in the Iowa Water Quality Standards.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Round Lake

Harrison County, S13,T80N,R45W, 2 mi. NNW of Mondamin.

LAKE SIZE: 350 Acres

Waterbody ID No.: IA-WETLAND-31

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau. Not assessed for either the 1994 or 1996 reports. For the 1998 report, used the recommendation of the DNR Wildlife Bureau to assess support of the aquatic life uses of this wetland as "not supporting" due to hydrological habitat modification and due to nonpoint source siltation impacts. This wetland is not yet designated for aquatic life uses in the Iowa Water Quality Standards.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: HARRISON CO

Tyson Bend

Harrison County, S28,T79N,R45W, 4 mi W of Modale.

LAKE SIZE: 75 Acres

Waterbody ID No.: IA 06-WEM-00370-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 reports, support of the Class B(LW) aquatic life uses was assessed as NS due primarily to (1) habitat alteration (destabilization of lake level) related to hydrological modification (channel degradation) of the Missouri River and (2) impacts from siltation related to agricultural nonpoint source runoff.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=NS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Willow Lake

Harrison County, S23,T80N,R43W, 5 mi. NW of Woodbine.

LAKE SIZE: 26 Acres

Waterbody ID No.: IA 06-LSR-01590-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both were assessed as FST for the following reasons: (1) results of monitoring in 1990 show that averages of secchi depth, total-P, chl-a, and TSS are approximately equal to, or better than, overall averages for the 116 SPOLs sampled in 1990 and 1992; (2) according to Bachmann et al. (1994) the lake as a relatively low sedimentation rate (2.5 cm/yr) and a relatively long life expectancy for an impoundment (145 years); (3) lake is relatively deep (mean depth = 3.7m), does not have problems with fishkills, and supports both fishing and swimming. Support of uses is slightly threatened by sediment in ag NPS runoff; otherwise, physical and chemical features of this lake are well above average for SPO impoundments in SW Iowa.

For 1996 report, used assessments of support for the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments of support developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: HENRY CO

Geode Lake

Henry County, S36,T70N,R5W, 4 mi. SW of Danville.

LAKE SIZE: 189 Acres

Waterbody ID No.: IA 03-SKU-00650-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report; both were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that average levels of secchi depth, chl-a, and TSS are better than overall averages for the 116 SPOLs sampled in 1990 and 1992. The average level of total-P was worse than the overall mean, but was within 1 SD from the overall average; (2) lake is relatively deep (mean depth = 7.2m) and has a relatively long life expectancy (236 years) for an impoundment; (3) Bachmann et al. (1994) report that the lake supports relatively large amounts of swimming and fishing, although filam. alage and algal blooms interfere with swimming every few years; (4) lake does not have problems with fishkills. Levels of fish contaminants were all < 1/2 FDA action level in 1992 but ccot continue to have rel. high levels of PCBs.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST), the Class B(LW) aquatic life uses (=FST), and the fish consumption uses (=FST) developed for the 1994 report.

For the 1998 report, used assessments of support of the Class A primary contact recreation uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the the 1994 report. Support of fish consumption uses was upgraded from FST to FS due to results of the 1996 Regional Ambient Fish Tissue (RAFT) monitoring program that showed levels of all contaminants in the composite sample of largemouth bass filets were less than 1/2 of the respective FDA action levels.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." The Class C (drinking water) uses were "not assessed." Fish consumption uses remain assessed as "fully supported." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. The Class C (drinking water) uses remained "not assessed" due to the lack of water quality information. Fish consumption uses remained assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1996 (see assessment developed for the 1998 report above).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: HOWARD CO

Lake Hendricks

Howard County, S19,T99N,R14W, 0.5 mi NE of Riceville.

LAKE SIZE: 40 Acres

Waterbody ID No.: IA 01-WPS-00375-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys by DNR Fisheries and results of fish tissue (RAFT) monitoring in 1994.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report; both uses were assessed as FST for the 1994 report for the following reasons: (1) monitoring conducted in 1992 shows that average levels of secchi depth, total-P, chl-a, and TSS were approximately equal to, or better than, overall means for the 116 SPOLs sampled in 1990 and 1992; (2) according to Bachmann et al. (1994), the lake supports relatively high amounts of fishing and swimming; (4) lake does not have a fishkill problem; (5) lake has a moderately high sedimentation rate (3.1 cm/yr) and has a moderately short life expectancy (77 years). Thus, lake appears to support both fishable and swimmable uses, but uses are threatened by sedimentation from agricultural areas. Lake is identified in March/April "Iowa Conservationist" (Fishing Forecast) as providing good catches of channel catfish and largemouth bass.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and Class B(LW) aquatic life uses (=FST) developed for the 1994 report. In addition, used results of fish contaminant monitoring conducted for the 1994 Regional Ambient Fish Tissue (RAFT) monitoring program to assess support of fish consumption uses as FS due to all levels of contaminants less than 1/2 FDA action levels in the composite sample of largemouth bass filets analyzed (see report of 1994 RAFT in Iowa (DNR 1996)).

For the 1998 report, continue to use assessment of support of the Class A primary contact uses (=FST) and Class B(LW) aquatic life uses (=FST) developed for the 1994 and 1996 reports. These assessments of use support were reviewed by the DNR Fisheries Bureau in 1998.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were considered "not assessed." The Class B(LW) aquatic life uses were assessed as "partially supported." Fish consumption uses were assessed as fully supported. EXPLANATION: The Class A uses were considered "not assessed" due to a lack of information on levels of indicator bacteria for this lake. The assessment of support for the Class B(LW) uses was changed from "fully supported / threatened" to "partially supported" based on the recommendation of the DNR Fisheries Bureau. Monitoring of winter levels of dissolved oxygen suggests that a water quality problem exists despite winter aeration. The primary impacts appear to be excessive growth of aquatic plants (macrophytes) and organic enrichment; siltation is not believed to be a problem. Fish consumption uses remained assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1994 (see assessment for the 1998 report above). This lake is scheduled to be sampled as part of the ISU/DNR lake water quality monitoring project.

Lakes, Wetlands, and Flood Control Reservoirs: IDA CO

Crawford Creek Impoundment Ida County, S10,T86N,R41W, 2.5 mi. S of Battle Creek.

LAKE SIZE: 62 Acres

Waterbody ID No.: IA 06-LSR-00790-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that averages of secchi depth, chl-a, total-P, and TSS are better than overall averages for the 116 SPOLs sampled in 1990 and 1992; (3) according to Bachmann et al. (1994), the lake does not have problems with fishkills and supports a relatively large amount of fishing; (4) lake has a moderately high sedimentation rate (3.4 cm/yr) and a moderately long life expectancy for an impoundment (102 years); DSC (1991) reports that (1) fishery surveys in 1987 and 1990 indicate an excellent fish population, (2) recreational uses of the lake were not impaired by NPSP, and (3) no major changes in WQ occurred between 1979 and 1987.

For the 1996 report, used assessment of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life use (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: IDA CO

Moorhead Park Pond

Ida County, S10,T87N,R39W, 0.5 mi N of Ida Grove.

LAKE SIZE: 10 Acres

Waterbody ID No.: IA 06-LSR-00805-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys by the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Fishable use was assessed as PS for the 1992 report; assessment was changed to FST for the 1994 report for the following reasons: (1) results of monitoring show that averages of secchi depth, chl-a, total-P, and TSS are approximately equal to, or better than, overall averages for the 116 SPOLs sampled in 1990 and 1992; (2) according to Bachmann et al. (1994), lake does not have problems with fishkills and supports a relatively high amount of fishing. Support of uses is threatened by the relatively high sedimentation rate (7.0 cm/yr) and consequently the relatively short estimated life expectancy (56 years).

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class B(LW) aquatic life uses were assessed as FST.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses remained assessed as "fully supported / threatened." Fish consumption uses were "not assessed." EXPLANATION: The Class B(LW) aquatic life uses remain assessed as "fully supporting / threatened" based on review and approval of the previous (1998) assessments by the DNR Fisheries Bureau in 2000. The water quality trend for this lake, however, was changed from "stable" to "declining." The fish consumption use remain "not assessed" due to lack of fish tissue monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: IOWA CO

Amana Lily Pond

Iowa County, S27,T81N,R9W, 1 mi. W of Amana.

LAKE SIZE: 44 Acres

Waterbody ID No.: IA 02-IOW-00505-L.

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts from siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, comments of DNR Wildlife Biologist indicate pesticides in runoff from a housing development are impacting the wetland, in addition to the siltation impacts previously identified.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000. The primary impact remains siltation from agricultural nonpoint sources.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: IOWA CO

Iowa Lake

Iowa County, S19,T79N,R11W, 4 mi. NNW of Millersburg.

LAKE SIZE: 86 Acres

Waterbody ID No.: IA 02-IOW-01150-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on reports by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as FST.

For the 1994 report: Both were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries, (2) results of monitoring in 1990 show that averages of secchi depth, total-P, chl-a, and TSS are better than overall averages for the 116 SPOLs sampled in 1990 and 1992; (3) according to Bachmann et al. (1994), the lake has a relatively low sedimentation rate (1.6 cm/yr) and a relatively long life expectancy (215 years); (4) lake does not have problems with fishkills. All contaminants in the composite sample of channel catfish filets collected for the 1993 Regional Ambient Fish Tissue (RAFT) monitoring program were less than 1/2 of respective FDA action levels (=FS of fish consumption uses).

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST), the Class B(LW) aquatic life uses (=FST), and the fish consumption uses (=FS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as FST. Continued to assess support of the fish consumption uses as FS based on results of RAFT fish tissue monitoring in 1993.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses were changed from "fully supported" to "not assessed" due to the lack of recent fish contaminant monitoring at this lake. The most recent fish tissue monitoring was conducted for the 1993 EPA/DNR "RAFT" program (see assessment developed for the 1994 report above). These data are now considered too old (greater than five years) for characterizing current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: JACKSON CO

Green Island Lake

Jackson County, S20,T85N,R6E, near Green Island.

LAKE SIZE: 526 Acres

Waterbody ID No.: IA 01-NEM-00230-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation and nutrients from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1992 and 1994 reports (=PS).

For the 1998 report, the assessment developed for the 1994 report was reviewed and approved by the DNR Wildlife Bureau. Thus, the Class B(LW) aquatic life uses were assessed as PS due to siltation impacts from agricultural nonpoint sources.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: JASPER CO

Mariposa Lake

Jasper County, S32,T81N,R18W, 6 mi. NE of Newton.

LAKE SIZE: 18 Acres

Waterbody ID No.: IA 03-NSK-00350-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report.

For the 1994 report, fishable uses were assessed as PS for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that averages levels of secchi depth, chl-a, total-P, and TSS are worse than overall averages of the 116 SPOLs sampled in 1990 and 1992; averages of total-P and TSS both approach the overall average +/- 1 SD; (3) Bachmann et al. (1994) report a relatively high sedimentation rate (4.2 cm/yr) and a relatively short life expectancy (53 years); they also report no swimming activity for the lake. Thus, lake appears to be impaired by sediment and nutrients eroded from agricultural land. Due to lack of use for swimming, swimmable uses not assessed.

For the 1996 report, used assessment of support of the Class B (LW) aquatic life uses developed for the 1994 report (=PS). Class A (primary contact) uses remain non assessed.

For the 1998 report, the assessment developed for the 1994 and 1996 reports (above) was reviewed and approved by the DNR Fisheries Bureau. Water quality problems related to siltation and nutrients from nonpoint sources remain for this lake. At the recommendation of the DNR Fisheries Bureau, this lake was placed on the 1998 list of Section 303(d) waters.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were considered "not assessed." The Class B(LW) aquatic life uses were assessed as "partially supported." Fish consumption uses were "not assessed." EXPLANATION: The Class A uses were considered "not assessed" due to lack of information on levels of indicator bacteria at this lake. Based on the recommendation of the DNR Fisheries Bureau, the Class B(LW) uses remained assessed as "partially supported." The water quality trend for this lake was changed from "declining" to "stable." According to the DNR Fisheries Bureau, this lake experienced severe blooms of algae in 1999. The fish consumption use remain "not assessed" due to lack of fish tissue monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: JASPER CO

Rock Creek Lake

Jasper County, S17,T80N,R17W, 4 mi. ENE of Kellogg.

LAKE SIZE: 602 Acres

Waterbody ID No.: IA 03-NSK-00340-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as NS for the 1992 report; both were assessed as PS for the 1994 report for the following reasons: (1) BPJ of DNR field staff and Fisheries agree that the lake is impaired by agricultural NPS runoff, but both tend to assess the lake as NS; (2) results of monitoring in 1990 show that average levels of secchi depth and total-P are worse than overall averages for the 116 SPOLs sampled in 1990 and 1992, but they are well within the overall average +/- 1 SD; levels of chl-a and TSS are at or better than the overall averages; (3) according to Bachmann et al. (1994), lake has a relatively low sedimentation rate (1.8 cm/yr) and relatively long life expectancy (144 years); they also report relatively high use figures for fishing and swimming. Thus, although WQ problems exist at the lake, WQ is close to average, and the lake continues to support both fishing and swimming.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, this lake was added to Iowa's 1998 list of Section 303(d) waters at the recommendation of the DNR Fisheries Bureau, with the primary water quality impairments due to siltation and nutrients from nonpoint sources. The water quality problems at this lake are currently being evaluated by limnologists at Iowa State University. This lake and its watershed are also being used as a pilot study for development of total maximum daily loads (TMDLs) for nonpoint pollutants. The Rock Creek Watershed Improvement Project, sponsored by the Jasper County Soil & Water Conservation District, was initiated in January 1998. For more information on this project, call 515/792-4116.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were considered "not assessed." The Class B(LW) aquatic life uses were assessed as "partially supported." The Class C (drinking water) uses remained "not assessed." The fish consumption uses were assessed as "fully supported." EXPLANATION: The Class A uses were considered "not assessed" due to lack of information on levels of indicator bacteria at this lake. Based on the recommendation of the DNR Fisheries Bureau, the Class B(LW) uses remained assessed as "partially supported." The water quality trend for this lake remains "declining." The Class C uses remained "not assessed" due to a lack of water quality for Class C water quality parameters. The fish consumption uses were assessed as "fully supported" based on results of fish tissue monitoring conducted in September 1998 as part of the "Rock Creek Lake Restoration Diagnostic / Feasibility Study (Downing et al. 2000). Analysis of composite samples of filets from largemouth bass and common carp showed no detectable levels of the 32 organochlorine insecticides and industrial compounds analyzed.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: JEFFERSON CO

Fairfield Municipal Reservoir1 Jefferson County, S13&24,T72N,R10W near Fairfield

LAKE SIZE: 142 Acres

Waterbody ID No.: IA 03-SKU-00950-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment if based on results of the "Iowa Voluntary Atrazine Monitoring Program" for 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Not assessed

Fish Consumption -- Not assessed Drinking Water Supply -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Reservoir was sampled at upper end on March 30, 1993, for 7 ag herbicides in water and sediment. Levels of atrazine (0.79 ug/l) and cyanazine (0.77 ug/l) were detected in water; no pests were detected in sediment. Compared to the other 14 reservoirs, levels of atrazine were relatively high. Additional study is needed to determine levels of herbicides during summer. Based on info for Corydon Reservoir (Kalkhoff 1993), the rel. high level of atrazine in winter at Fairfield Res (1) suggests the possibility of levels > MCL during summer. However, levels in water were < 1/2 MCL; thus assess as FST. More monitoring is needed.

For 1996 report, used results of sampling for eight common agricultural herbicides as report in Miller and Kennedy 1995 to assess support of the Class C (drinking water) uses as FST due to (1) low levels of the three herbicides detected: atrazine, 1.6 ug/l; cyanazine, 2.1 ug/l; and metolachlor 0.1 ug/l and (2) the lack of any MCL violations. Levels of atrazine & cyanazine, however, were approx. twice the average levels in the 19 reservoirs sampled. As stated for the 1994 assessment, other studies (especially Kalkhoff 1993) suggest that levels of atrazine in this reservoir may exceed the MCL during summer. More monitoring is needed.

For the 1998 report, continue to use the assessment of support of the Class C (drinking water) uses developed for the 1996 report (see above) (=FST).

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses and the fish consumption uses remain "not assessed." The Class C (drinking water) uses were assessed as "fully supported / threatened." EXPLANATION: The Class B(LW) uses were not assessed due to a lack of information on the aquatic communities of this lake. The Class C (drinking water) uses were assessed as "fully supported / threatened" based on the 1998 results of the Novartis "Iowa Voluntary Atrazine Monitoring Program." This monitoring showed that the time-weighted mean level of atrazine in samples collected from January to December 1998 (1.6 ug/l, N=31, maximum=4.3 ug/l) was below the MCL of 3.0 ug/l. Based on DNR's Section 305(b) assessment methodology, if the average contaminant level in source water is less than the MCL, but a level in one or more samples is above the MCL, the Class C (drinking water) uses of the source water should be assessed as "fully supported / threatened." Thus, the Class C uses of Fairfield Municipal Reservoir 1 were assessed as "fully supported / threatened." Fis consumption uses were "not assessed due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: JEFFERSON CO

Fairfield Municipal Reservoir2

Jefferson County, SE 1/4,S24,T72N,R10W near Fairfield.

LAKE SIZE: 23 Acres

Waterbody ID No.: IA 03-SKU-00955-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of the 1995 UHL survey of water supply reservoirs (Miller and Kennedy 1995). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Not assessed
Fish Consumption -- Not assessed Drinking Water Supply -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Lake was monitored on March 30, 1993 for 7 ag herbicides in water and sediment at one location in the reservoir. Atrazine (1.1 ug/l) and cyanazine (1.2 ug/l) were detected; none of the other 5 herbicides were detected; no herbicides were detected in sediment. Compared to results from the other 14 reservoirs, levels of atrazine were relatively high. In addition, results of monitoring at Corydon Reservoir (Kalkhoff 1993) suggest that levels of ag herbicides in summer may be greater than the MCL. Additional monitoring during summer is needed at this reservoir. Because levels of atrazine < 1/2 MCL, DW uses were assessed as FST. Fishable uses were assessed as PS based on BPJ used in 1992 305(b) report with sediment from agriculture identified as the primary cause of impairment.

For 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS). Used results of sampling for eight common agricultural herbicides reported in Miller and Kennedy (1995) to assess support of the Class C (drinking water) uses as FST due to lack of reportable levels of any herbicides in the water or sediment of this reservoir.

For the 1998 report, continue to use the assessment of support of the Class B(LW) aquatic life uses (=PS) and of the Class C (drinking water) uses (=FST) developed for the 1996 report. Class B(LW) uses were assessed as PS due to siltation from agricultural nonpoint sources.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses were considered "not assessed." The Class C (drinking water) uses remain assessed as "fully supported / threatened." Fish consumption uses remained "not assessed." EXPLANATION: The support of the Class B(LW) aquatic life uses were changed from "partially supported" to "not assessed" due to the lack of recent information on the status of aquatic life at this lake. The assessment of support of the Class C (drinking water) uses remains based on the UHL survey of water supply reservoirs in 1995 (Miller and Kennedy 1995) (see assessment developed for the 1996 report above). Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

Walton Reservoir

Jefferson County, S30,T72N,R9W, at NE edge of Fairfield.

LAKE SIZE: 22 Acres

Waterbody ID No.: IA 03-SKU-00945-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of the Iowa Voluntary Atrazine Monitoring Program for 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Not assessed
Fish Consumption -- Not assessed Drinking Water Supply -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994, 1996, or 1998 reports.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses and the fish consumption uses were "not assessed." The Class C (drinking water) uses were assessed as "fully supported / threatened." EXPLANATION: The Class B(LW) uses were not assessed due to a lack of information on the aquatic communities of this lake. The Class C (drinking water) uses were assessed as "fully supported / threatened" based on the 1998 results of the Novartis "Iowa Voluntary Atrazine Monitoring Program." This monitoring showed that the time-weighted mean level of atrazine in samples collected from January to December 1998 (2.3 ug/l, N=31, maximum=4.9 ug/l) was below the MCL of 3.0 ug/l. Based on DNR's Section 305(b) assessment methodology, if the average contaminant level in source water is less than the MCL, but a level in one or more samples is above the MCL, the Class C (drinking water) uses of the source water should be assessed as "fully supported / threatened." Thus, the Class C uses of Walton Reservoir were assessed as "fully supported / threatened." Fish consumption uses were "not assessed" due to the lack of fish contaminant monitoring at this reservoir.

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Coralville Reservoir

Johnson County, S22,T80N,R6W (dam), 3 mi N of Iowa City.

LAKE SIZE: 4900 Acres

Waterbody ID No.: IA 02-IOW-0040-L

Waterbody Type: Freshwater Reservoir

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on water quality monitoring conducted as part of the UI/ACOE "Coralville Water Quality Study. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report, had no violations of Class B(WW) WQC; 2 of 31 samples (=6%=FS) exceeded Class A WQ criteria for fecals. Did have problems at Sandy Beach (6 of 12 samples > Class A WQC after eliminating samples from periods of inundation.

For 1994 report, had no violations of Class B(WW) WQC or Class A WQC at the WQ monitoring station at Mahaffey Br. Did, however, have violations of Class A WQC at swimming beaches: using data from page 48 of 1992 annual report (only data available), had a total of 27 sampling events at three beaches in 1992. If data from samples coll during runoff periods are removed, only 1 of 15 sampling events had samples with levels of fecals > Class A WQC (=6% violation = FS). All fish contams < 1/2 FDA levels (=FS). Aquatic life (and Class A) uses of reservoir are threatened by sediment delivered in ag. NPS.

For 1996 report, had no viols of Class A or Class B(WW) WQ criteria in the 45 samples collected in 1994 and 1995 from the sample location at the Mahaffey Bridge. Did, however, have report of violation of Class B(WW) WQC for DO on Feb 18, 1993 at reservoir surface (0.2 mg/l) see Johnson & McDonald 1994: 18) that occurred during heavy ice cover and coincided with a high BOD of 15 mg/l; high BOD values did not occur upriver from the reservoir at this time. These conditions, coupled with falling pool level, likely led to an "extensive fish kill" at this time (see Johnson & McDonald 1994: 19). Levels of fecal coliform bacteria generally exceeded the Class A WQC in 93 except at the West Overlook Beach, probably due to extremely high runoff; levels in 1994 were nearly all below the WQC (=FS). Levels of all organochlorines and mercury in fish fillet well below FDA action levels (=FS). No info for 1995 bacteria & fish contams.

For the 1998 report, assess support of the Class A primary contact recreation uses as FS: no violations of WQ criteria for fecal coliform bacteria in the 18 samples collected at the MaHaffey Bridge station during summers of 1996 & 97 (geometric mean=17 orgs/100 ml; max=200 orgs/100 ml). Sampling at the 3 beaches (W. Overlook, Sugar Bottom and Sandy) during summers of 95 & 96 showed no levels exceeding 200 orgs/100 ml during the 18 sampling events over the two years. Class B(WW) aquatic life uses were assessed as FS: no violations of Class B(WW) WQ criteria for conventional pollutants and ammonia in the 44 samples collected from Oct 1995 to Sep 1997. In addition, the March/April 1998 Iowa Conservationist notes that Coralville Reservoir provide good to excellent angling opportunities for saugeye, white bass, crappie, channel catfish, flathead catfish, and walleye. Fish consumption uses were assessed as FS: levels of organochlorine contaminants (chlordan, dieldrin, heptachlor epoxide, & DDE) and mercury were well below 1/2 of respective FDA action levels in fillet and whole-fish composite samples of carp in 1995 & 96 (no fillet samples or mercury analysis in 96).

For the 2000 report: SUMMARY: Class A (primary contact recreation) uses of the reservoir and its swimming beaches were assessed as "fully supported;" the Class B(WW) aquatic life uses were assessed as "partially supported." Fish consumption uses were assessed as "fully supported." EXPLANATION: The assessments of support of the beneficial uses are based on results of water quality monitoring conducted by the University of Iowa (under contract with the U.S. Army Corps of Engineers) as part of the Coralville Reservoir Water Quality Study (Johnson and McDonald 1999, 2000). Results of water quality monitoring at the long-term station at the MaHaffey Bridge on the main reservoir suggest that the Class A uses should be assessed as "fully supporting." The geometric mean of indicator bacteria (fecal coliforms) in the 19 samples collected in summers of 1998 and 1999 was 20 orgs/100 ml; one sample (5%) exceeded the EPA-recommended single sample maximum value of 400 orgs/100 ml. According to U.S. EPA guidelines for Section 305(b) reporting, a geometric mean for fecal coliforms less than 200 orgs/100 ml, combined with less than 10% of samples exceeding the 400 orgs/100 ml single sample maximum value, suggest full support of primary contact recreation uses. (see pgs 3-33 to 3-35 of U.S. EPA 1997b). Levels of indicator bacteria (fecal coliforms) at all three reservoir beaches (West Overlook, Sugar Bottom, and Sandy Beach) were well-below the Class A water quality criterion of 200 orgs/100 ml in 1997: None of the samples collected during the nine sampling events from June through August exceeded 200 orgs/100 ml (maximum level was 100 orgs/100 ml). In 1998, however, all reservoir swimming beaches were closed from late June to early August due to high reservoir levels (Johnson and McDonald 2000). Levels of fecal coliforms began exceeding the 200 orgs/100 ml criterion in early and mid-June 1998 in response to rainfall events and high inflows to the reservoir. Although West Overlook Beach never exceeded the 200 orgs/100 ml criterion, both Sugar Bottom beach and Sandy Beach had levels above 200 orgs/100 ml in June. When the beaches were reopened in mid-August 1998, levels of fecal coliforms were again well-below the 200 orgs/100 ml criterion (maximum value for August 1998 was 90 orgs/100 ml). Because the levels exceeding 200 orgs/100 ml occurred at the beaches during high rainfall / high runoff periods, these levels are not violations of the Iowa Class A criterion for primary contact recreation. Thus, the Class A uses of these beaches are assessed as "fully supported." The Class B(WW) aquatic life uses of the reservoir were assessed as "partially supported" due to violations of the state water quality criterion for dissolved oxygen. Five of the 43 samples (12%) collected during the 1998-1999 biennial period violated the state criterion of 5.0 mg/l dissolved oxygen. According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b: page 3-17), a violation frequency for conventional parameters of from 11 to 25% suggests "partial support" of aquatic life uses. The five violations of dissolved oxygen ranged from 4.5 to 4.9 mg/l and occurred during July and August of both 1998 and 1999. In addition, one of 42 samples collected during the 1998-1999 biennial period violated the chronic criterion for ammonia nitrogen in Class B(WW) waters: the sample collected on February 12, 1998 contained 4.4 mg/l of ammonia-nitrogen (chronic criterion = 1.85 mg/l). According to U.S. EPA guidelines for Section 305(b) reporting (U.S. EPA 1997b, page 3-18), this one violation does not suggest an impairment of the aquatic life uses. Violations of ammonia-nitrogen

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criteria also occurred on this date at monitoring stations upriver (South Amana) and downriver (Iowa City) from Coralville Reservoir. Fish consumption uses were assessed as "fully supporting." Fish contaminant monitoring conducted in Coralville Reservoir in 1997 and 1998 as part of the Coralville Reservoir Water Quality Study showed that levels of organochlorine contaminants (chlordane, dieldrin, and heptachlor epoxide) in composite samples of whole-fish carp were well below respective FDA action levels (see Johnson and McDonald (1999, 2000) for more information).

Hawkeye Wildlife Area

Johnson County, S22,T81N,R7W, 5 mi. NW of North Liberty.

LAKE SIZE: 450 Acres

Waterbody ID No.: IA-WETLAND-34

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on surveys by the DNR Wildlife Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
 Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau. Not assessed for either the 1994 or 1996 reports.

For the 1998 report, assessed support of the Class B(LW) aquatic life uses as PS based on information from DNR Wildlife Bureau that this wetland is impaired by excessive siltation from nonpoint source delivery of sediment from the watershed and by grass carp that can potentially remove the natural wetland vegetation. Unstable water levels are also a problem for management of this wetland. DNR Wildlife recommended changing the acreage of this waterbody from 450 to 2,500 acres.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses remained assessed as "partially supported." EXPLANATION: The Class B(LW) aquatic life uses remain assessed as "partially supported" based on review and approval of the previous (1998) assessment by the DNR Wildlife Bureau in 2000. The water quality trend for this wetland area was identified as "stable to declining." According to the DNR Wildlife Bureau, wetland quality varies from year to year due to fluctuations in the flood pool of Coralville Reservoir.

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Kent Park Lake

Johnson County, S24,T80N,R8W, 2.5 mi. W of Tiffin.

LAKE SIZE: 26 Acres

Waterbody ID No.: IA 02-IOW-01630-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both fishable and swimmable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) results of ISU monitoring show that average levels of secchi depth, total-P, chl-a, and TSS were approximately equal to, or better than, overall averages for the 116 SPOLs sampled in 1990 and 1992; (3) according to Bachmann et al. (1994), lake has moderately high sedimentation rate (3.1 cm/yr) and moderately low life expectancy (70 years); (4) they also report moderately high numbers for swimming and fishing uses; (5) fishkills are not a problem; (6) according to Bachmann et al. (1994), "nuisance algal blooms are minimal." Thus, lake has approximately average water quality for SPOLs in Iowa and is threatened by sediment delivered to the lake in NPS runoff.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessment developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

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Lake MacBride

Johnson County, S29,T81N,R6W, 4 mi. W of Solon.

LAKE SIZE: 812 Acres

Waterbody ID No.: IA 02-IOW-00390-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) results of DNR/Parks beach monitoring in 1999 and (2) surveys by the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses of MacBride were assessed as PS for the 1992 report; both were assessed as FST for the 1994 report for the following reasons: (1) results of monitoring in 1990 show that average levels of secchi depth, chl-a, total-P, and TSS were approximately equal to, or better than, overall averages for the 116 SPOLs sampled in 1990 and 1992; (3) accord. to Bachmann et al. (1994), the lake has a relatively low sedimentation rate (1.0 cm/yr) and a relatively long life expectancy (486 years); they also report relatively high amounts of use for both fishing and swimming; fishkills are not a problem and "nuisance algal blooms are minimal." Uses are threatened by agricultural runoff and by treated wastewater from Solon via Mill Creek. According to DNR Fisheries, lake is impaired by rough fish that gain access to lake during high water in Coralville Reservoir. DSC (1991) suggest threats from NPSP in both arms.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST), the Class B(LW) aquatic life uses (=FST), and the fish consumption uses (=FS) developed for the 1994 report.

For the 1998 report, the 1996 assessment was reviewed and approved by the DNR Fisheries Bureau. Thus, continue to assess support of the Class A primary contact and Class B(LW) aquatic life uses as FST; also continue to assess support of fish consumption uses as FS based on results of the 1991 RAFT sampling. DNR Fisheries, however, identified siltation and nutrients from nonpoint sources, as well as impacts of large populations of carp, as significant threats to the continued support of the beneficial uses designated for this lake. Thus, this lake was placed on the 1998 list of Section 303(d) waters at the recommendation of the DNR Fisheries Bureau.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "fully supporting." The Class B(LW) aquatic life uses remained assessed as fully supporting / threatened"; fish consumption uses were considered "not assessed." The level of this lake was lowered in 2000 for lake improvement work. EXPLANATION: Levels of indicator bacteria at Lake MacBride beach were monitored approximately twice per week during summer 1999 by DNR Parks, Recreation and Preserves Division as part of a beach monitoring program at 11 state-owned lakes. Results of the 33 samples collected at this beach showed that levels of indicator bacteria (fecal coliforms) were very low compared to other Iowa lakes, with the overall geometric mean (11 orgs/100 ml) well below the state water quality criterion of 200 orgs/100 ml. The maximum level of fecal coliforms in the 34 samples was 40 orgs/100 ml on July 26, 1999; thus, no samples exceeded the Iowa water quality criterion of 200 orgs/100 ml. According to U.S. EPA guidelines for determining "full support" of primary contact uses (U.S. EPA 1997b, page 3-35), the geometric mean of fecal coliform bacteria levels should not exceed 200 orgs/100ml based on at least five samples in a 30-day period. In addition, not more than 10% of the total samples taken during any 30-day period should have a density that exceeds 400 orgs/100 ml. None of the sixteen 30-day periods during summer 1999 had geometric means (N = from 6 to 10 samples per period) greater than the state water quality criterion of 200 orgs/100ml.; the maximum 30-day geometric mean was 13 orgs/100ml. No samples exceeded the EPA-recommended single sample maximum density for fecal coliform bacteria of 400 orgs/100ml. Thus, the Class A (primary contact recreation) uses were assessed as "fully supported." The Class B(LW) aquatic life uses remain assessed as "fully supporting / threatened" based on review and approval of the previous (1998) assessments by the DNR Fisheries Bureau in 2000. Fish consumption uses were previously assessed as fully supported (=FS) based on results of EPA/DNR fish tissue (RAFT) monitoring in 1991 that showed levels of all contaminants in the composite sample of filets from channel catfish were less than 1/2 of respective FDA action levels and DNR levels of concern. Results of this monitoring are now considered too old (greater than five years) to assess the current levels of contaminants in fish. Thus, the assessment of fish consumption uses was changed from "fully supporting" to "not assessed."

Lakes, Wetlands, and Flood Control Reservoirs: JOHNSON CO

Swan Lake

Johnson County, S5,T80N,R7W, 4 mi. N of Tiffin.

LAKE SIZE: 35 Acres

Waterbody ID No.: IA 02-IOW-00405-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based surveys of the DNR Wildlife Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 reports, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1992 and 1994 reports (=PS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) uses developed for the 1994 report (=PS), with the addition of nutrients as an impact at the recommendation of the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses were assessed as "fully supported / threatend." EXPLANATION: Based on a review of the previous (1998) assessment (see above) by the DNR Wildlife Bureau, the support of the Class B(LW) aquatic life uses was changed from "partially supported" to "fully supported / threatened." The primary threat remains siltation, but this waterbody is fulfilling its function as a wetland.

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Central Park Lake

Jones County, S1,T84N,R3W, 6 mi E of Anamosa.

LAKE SIZE: 25 Acres

Waterbody ID No.: IA 01-MAQ-01580-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses of Central Lake were assessed as PS.

For the 1994 report: Both the fishable and swimmable uses were assessed as PS for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that average levels of secchi depth, chl-a, and TSS are better than overall averages for the 116 SPOLs sampled in 1990 and 1992; average level of total-P was worse than overall mean but was within 1 SD; (3) according to Bachmann et al. (1994) lake has a moderately high sedimentation rate (2.3 cm/yr) and a life expectancy of 107 years; (4) they also report that fishkills are not a problem. Swimmable assessed as PS for the following reason: Bachmann et al. (1994) report that the lake has "high nuisance blooms." These blooms can impair swimming uses although use figures for swimming reported by Bachmann et al. (1994) are relatively high; thus, impaired by high levels of nutrients in ag NPSP.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the 1996 WQ assessment was reviewed and approved by the DNR Fisheries Bureau. This lake was added to the 1998 list of Section 303(d) waters at the recommendation of DNR Fisheries.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "partially supported" to "not assessed" due to (1) the lack of information on levels of indicator bacteria at this lake and (2) the lack of current (less than five years old) information on algal populations at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Muskrat Slough

Jones County, S16,T83N,R3W, 3 mi. W of Olin.

LAKE SIZE: 245 Acres

Waterbody ID No.: IA 01-WPS-00180-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1992 and 1994 reports (=PS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report. Thus, the Class B(LW) uses were assessed as PS due to siltation from agricultural nonpoint sources.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: **KOSSUTH CO**

Burt Lake

Kossuth County, S9,T100N,R30W, 7 mi NNW of Swea City.

LAKE SIZE: 46 Acres

Waterbody ID No.: IA 04-BLU-00800-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS primarily due to high levels of nutrients from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report. Thus, the Class B(LW) uses were assessed as PS due to high levels of nutrients delivered to the wetland in agricultural nonpoint source runoff.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Iowa Lake Marsh

Kossuth County, S7,T100N,R30W, 10 mi. NW of Swea City.

LAKE SIZE: 197 Acres

Waterbody ID No.: IA-WETLAND-36

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1992, 1994, or 1996 reports.

For the 1998 report, comments of the DNR Wildlife biologist indicate that the aquatic life uses of this wetland are fully supported but threatened by nutrients from agricultural nonpoints sources.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: **KOSSUTH CO****Lake Smith**

Kossuth County, S36,T96N,R29W, 3 mi. N of Algona.

LAKE SIZE: 59 Acres

Waterbody ID No.: IA 04-EDM-00610-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses of Smith Lake were assessed as PS.

For the 1994 report: Both fishable and swimmable uses were assessed as PS for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that average levels of secchi depth, chl-a, total-P, and TSS are worse than the overall averages for the 116 SPOLs sampled in 1990 and 1992; average level of chl-a (150.8 mg/m³, SE=31.7) is worse than the overall average + 1 SD (77 mg/m³); (3) Bachmann et al. (1994) report relatively low fishing pressure, but fishkills are not a problem; (4) they also report "occasional excessive blue-green algae blooms". Low rates of erosion (estimated at 0.0 to 3.0 T/A/YR) suggest that agricultural NPS is not a major problem for this lake. Relatively large areas of shallow depth (6' or less) probably encourage resuspension of sediment and nutrients thus leading to organic enrichment problems.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as PS due to nuisance levels of algae and organic enrichment in this naturally shallow lake.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "partially supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: **KOSSUTH CO**

Michaelsen Marsh

Kossuth County, S1,T97N,R28W, 2.5 mi W of Titonka.

LAKE SIZE: 20 Acres

Waterbody ID No.: IA-WETLAND-37

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1992, 1994, or 1996 reports.

For the 1998 report, comments of the DNR Wildlife biologist indicate that the aquatic life uses of this wetland are fully supported but threatened by nutrients from agricultural nonpoint sources.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

State Line Marsh

Kossuth County, S11,T100N,R30W, 7 mi NNW of Swea City.

LAKE SIZE: 109 Acres

Waterbody ID No.: IA-WETLAND-38

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1992, 1994, or 1996 reports.

For the 1998 report, comments of the DNR Wildlife biologist indicate that the aquatic life uses of this wetland are fully supported but threatened by nutrients from agricultural nonpoint sources.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: KOSSUTH CO

Union Slough

Kossuth County, S35,T98N,R28W, 5 mi. WNW of Titonka.

LAKE SIZE: 1000 Acres

Waterbody ID No.: IA 04-EDM-00190-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1992 and 1994 reports (=PS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life use developed for the 1994 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau. Biologist notes that a water quality study/watershed project is being conducted by the U.S. Fish & Wildlife Service.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: LEE CO

Poll Miller Park Lake

Lee County, S9,T68N,R5W, 0.5 mi. E of West Point.

LAKE SIZE: 18 Acres

Waterbody ID No.: IA 03-SKM-00178-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both swimmable and fishable uses of Pollmiller Lake were assessed as PS.

For the 1994 report: Both swimmable and fishable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that average levels of secchi depth, chl-a, total-P, and TSS are better than overall averages for the 116 SPOLs sampled in 1990 and 1992; all farms are in the middle of the range of the overall mean +/- 1 SD; (3) this relatively small impoundment has a relatively low sedimentation rate and long life expectancy (163 years); (4) fishkills are not a problem; (5) Bachmann et al. (1994) report relatively high useage for both fishing and swimming. Thus, lake has above average water quality for SPOLs in Iowa and receives considerable use for fishing and swimming. Lake appears only slightly threatened from ag-related sedimentation.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B aquatic life uses were assessed as FST, with only slight threats to these uses from agricultural nonpoint sources.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: LINN CO

Cedar Lake

Linn County, S21,T83N,R7W, in Cedar Rapids.

LAKE SIZE: 150 Acres

Waterbody ID No.: IA 02-CED-02250-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of fish tissue (RAFT) monitoring and occurrence of a fish kill in April 1997. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Fish Consumption -- Not supporting

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Lake has a history of fish contaminant monitoring beginning in 1985 with study by UHL (Kennedy and Splinter 1985) and continuing with fish contaminant monitoring conducted as part of the DNR/U.S. EPA "Regional Ambient Fish Tissue (RAFT) monitoring program in 1986, 1988, 1990, 1992 and 1994 (for a more detailed summary of fish contaminant monitoring at Cedar Lake, see pages 4-6 of the report for the 1990 RAFT program in Iowa (DNR 1992)). Levels of chlordane that exceeded FDA action level for chlordane led to a fish consumption advisory for all species in March 1986. Levels of PCBs first exceeded the FDA action level in the 1988 RAFT sample. Levels of chlordane and PCBs remained above FDA action levels until the 1994 sample, when levels of both chlordane and PCBs were below FDA action levels (chlordane: 0.28 mg/kg; total PCBs: 0.29 mg/kg) in a composite sample of carp fillets. Additional years of monitoring will be necessary to determine whether contaminant levels have dropped and whether the consumption advisory can be modified. The fish consumption advisory issued in March 1986 remains in effect; thus, the assessment of support of the fish consumption uses = NS.

For the 1998 report, continued to assess support of fish consumption uses as NS due to continued existence of the fish consumption advisory issued in March 1986. Sampling for the 1996 Regional Ambient Fish Tissue (RAFT) monitoring program showed that (1) levels of all contaminants in the composite sample of largemouth bass fillets were very low and well below 1/2 of the respective FDA action levels and (2) levels of technical chlordane in the composite sample of carp fillets (0.18 mg/kg wet weight (=ppm)) exceeded 1/2 the FDA action level of (0.300 ppm) while the level of total PCBs (0.295 ppm) was less than 1/2 the FDA action level of 2.0 ppm. Additional sampling will be conducted to determine whether to lift the fish consumption advisory. A fish kill was reported at Cedar Lake on May 19, 1995. An estimated 300 fish were killed. No source or cause of this kill was identified. An additional kill was reported on April 24, 1997. An estimated 24 fish were killed; the cause of the kill was identified as furfural, low pH, and high water temperatures; the source was identified as industrial.

For the 2000 report: SUMMARY: The general aquatic life uses were assessed as "partially supported." Fish consumption uses remain assessed as "not supporting." Other beneficial uses of this "general use" lake were not assessed. EXPLANATION: A fish kill occurred on Cedar Lake on April 24, 1997 (see assessment for the 1998 report above). According to DNR's assessment methodology for Section 305(b) reporting, occurrence of a single pollution-caused fish kill within the most recent three-year period indicates that the aquatic life uses of a waterbody are only "partially supported." Thus, the assessment of support of the general aquatic life uses of Cedar Lake was changed from "not assessed" to "partially supported." Results of EPA/DNR fish tissue (RAFT) monitoring in 1998 showed that levels of technical chlordane in two composite samples of carp fillets (0.32 and 0.34 ppm) exceeded the FDA action level of 0.30 ppm. Thus, despite results of fish tissue monitoring in 1994 and 1996 that suggested lower levels of chlordane, monitoring in 1998 shows that chlordane levels continue to exceed the FDA action levels (although slightly) and that the fish consumption advisory issued for the lake in 1986 should remain in effect. Due to the existence of the fish consumption advisory, the fish consumption uses for this lake remain assessed as "not supporting." This lake will be again monitored as part of the EPA/DNR fish tissue monitoring program in 2000. Water quality data / information are not available for assessing support of other beneficial uses of this privately-owned lake.

Lakes, Wetlands, and Flood Control Reservoirs: LINN CO

Pleasant Creek Lake

Linn County, S31,T85N,R8W, 4 mi. NNW of Palo.

LAKE SIZE: 407 Acres

Waterbody ID No.: IA 02-CED-00310-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on results of (1) DNR/Parks beach monitoring in 1999, (2) surveys of DNR Fisheries Bureau, and (3) fish tissue (RAFT) monitoring in 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assess as FST for the 1992 report.

For the 1994 report, both fishable and swimmable uses were assessed as "fully supported" for the following reasons: (1) results of monitoring in 1990 show that average levels of secchi depth, total-P, and TSS are all better than overall averages for the 116 SPOLs sampled in 1990 and 1992; average level of chl-a approx. equal to the overall average; thus, lake has some of the best water quality of any SPO impoundment in Iowa; (2) according to Bachmann et al. (1994), lake receives exceptionally high use for both fishing and swimming; (3) lake has extremely low sedimentation rate (0.5 cm/ yr) and extremely long life expectancy (1093 years) for an impoundment in Iowa; (4) 100% of watershed is in approved soil conservation practices (5) nuisance algal blooms are minimal, and fishkills are not a problem. DSC (1991) reports that WQ is > average, fish & rec use very high, and no impairments fr NPSP.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FS) and the Class B(LW) aquatic life uses (=FS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as "fully supported."

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "fully supporting." The Class B(LW) aquatic life uses remained assessed as fully supporting"; fish consumption uses were assessed as "fully supported." EXPLANATION: Levels of indicator bacteria at Pleasant Creek Lake beach were monitored approximately twice per week during summer 1999 by DNR Parks, Recreation and Preserves Division as part of a beach monitoring program at 11 state-owned lakes. Results of the 35 samples collected at this beach showed that levels of indicator bacteria (fecal coliforms) were generally low, with the overall geometric mean (14 orgs/100 ml) well below the state water quality criterion of 200 orgs/100 ml. The maximum level of fecal coliforms in the 34 samples was 190 orgs/100 ml on August 23, 1999. Thus, no samples exceeded the state water quality criterion of 200 orgs/100 ml. According to U.S. EPA guidelines for determining "full support" of primary contact uses (U.S. EPA 1997b, page 3-35), the geometric mean of fecal coliform bacteria levels should not exceed 200 orgs/100ml based on at least five samples in a 30-day period. In addition, not more than 10% of the total samples taken during any 30-day period should have a density that exceeds 400 orgs/100 ml. None of the sixteen 30-day periods during summer 1999 had geometric means (N = from 6 to 10 samples per period) greater than the state water quality criterion of 200 orgs/100ml; the maximum 30-day geometric mean was 22 orgs/100ml. No samples exceeded the EPA-recommended single sample maximum density for fecal coliform bacteria of 400 orgs/100ml. Thus, the Class A (primary contact recreation) uses were assessed as "fully supported." The Class B(LW) aquatic life uses remain assessed as "fully supporting" based on review and approval of the previous (1998) assessments by the DNR Fisheries Bureau in 2000. Fish consumption were assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1999 that showed very low levels of all contaminants in the composite samples of fillets from channel catfish and largemouth bass; all contaminant levels were less than 1/2 of respective FDA action levels and DNR levels of concern.

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Lakes, Wetlands, and Flood Control Reservoirs: LOUISA CO

Cone Marsh

Louisa County, S14,T76N,R5W, 8 mi. N of Columbus Junction.

LAKE SIZE: 525 Acres

Waterbody ID No.: IA 02-IOW-00240-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS primarily due to high levels of nutrients delivered to the lake in agricultural nonpoint source runoff.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1992 and 1994 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate siltation impacts from agricultural nonpoint sources are the primary threat to full attainment of B(LW) use. Use support status was upgraded from PS to FST based on recommendation of biologist.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Indian Slough

Louisa County, S8,T74N,R3W, 2.5 mi. NNW of Wapello.

LAKE SIZE: 200 Acres

Waterbody ID No.: IA-WETLAND-39

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1992, 1994, or 1996 reports.

For 1998 report, DNR Wildlife Biologist comment indicated the wetland is impacted by siltation from agricultural nonpoint source runoff and that support of the aquatic life uses should be assessed as FST (this wetland is not yet designated for Class B(LW) aquatic life uses in the Iowa Water Quality Standards).

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: LOUISA CO

Klum Lake

Louisa County, S25,T75N,R2W, 2 mi. ESE of Grandview.

LAKE SIZE: 240 Acres

Waterbody ID No.: IA 01-NEM-00115-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS primarily due to high levels of nutrients delivered to the lake in agricultural nonpoint source runoff.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1992 and 1994 reports (=PS).

For the 1998 report, comments of DNR Wildlife Biologist indicate, in addition to nutrient impacts previously identified, the marsh is impacted by dewatering caused by a drainage ditch that runs adjacent to the wetland. According to the biologist, "pumping is required nearly every year." Continue to assess support of the Class B(LW) aquatic life uses as PS.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lake Odessa

Louisa County, S2,T73N,R2W, 4 mi. E of Wapello.

LAKE SIZE: 3000 Acres

Waterbody ID No.: IA 01-NEM-00105-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of both the Class A (primary contact) uses and the Class B(LW) aquatic life uses was assessed as PS primarily due to high levels of nutrients delivered to the lake in agricultural nonpoint source runoff.

For the 1996 report, used assessments of support of the Class A and Class B(LW) uses developed for the 1992 and 1994 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate chronic flooding impacts caused by the Lock and Dam system on the Mississippi River are the primary threat to full attainment of B(LW) use. Despite flooding impacts and presumed high nutrient levels from agricultural nonpoint sources, use support status was upgraded from PS to FST based on biologist recommendation.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: LUCAS CO

Brown's Slough

Lucas County, S35,T71N,R20W, 6 mi. SSE of Russell.

LAKE SIZE: 200 Acres

Waterbody ID No.: IA 05-CHA-00310-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS primarily due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report.

For the 1998 report, continue to use the assessment of support of the Class B(LW) uses developed for the 1998 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Morris Lake

Lucas County, S26,T72N,R21W approx 3 mi E of Chariton.

LAKE SIZE: 200 Acres

Waterbody ID No.: IA 04-LDM-02294-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of the 1995 UHL survey of Iowa water supply reservoirs (Miller and Kennedy 1995). See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Not assessed

Fish Consumption -- Not assessed Drinking Water Supply -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for the 1994 report.

For the 1996 report, used results of sampling for eight common agricultural herbicides at the lake inlet and near the dam on January 30, 1995, as part of a study of 19 Iowa water supply reservoirs (Miller and Kennedy 1995) to assess support of the Class C (drinking water) uses as FST due to (1) detection of atrazine at levels (0.57 and to 0.67 ug/l, dam and inlet) at less than the average reportable concentration for the 19 lakes sampled (0.84 ug/l), (2) detection of cyanazine at levels (0.46 and 0.58 ug/l, dam and inlet) at about one-half the average reportable concentration (1.03 ug/l), and (3) no levels above the MCL for atrazine.

For the 1998 report, continue to use the assessment of support of the Class C (drinking water) uses developed for the 1996 report (=FST). The Class B(LW) aquatic life uses remain "not assessed" due to lack of information.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses remain "not assessed." The Class C (drinking water) uses remain assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class B(LW) remain "not assessed" due to the lack of recent information on the status of aquatic life at this lake. The assessment of support of the Class C (drinking water) uses remains based on the UHL survey of water supply reservoirs in 1995 (Miller and Kennedy 1995) (see assessment developed for the 1996 report above). Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: LUCAS CO

North Colyn Marsh

Lucas County, S30,T71N,R20W, 3 mi. S of Russell.

LAKE SIZE: 200 Acres

Waterbody ID No.: IA 05-CHA-00315-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS primarily due to siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: LUCAS CO**Red Haw Lake**

Lucas County, S28,T71N,R21W, 2 mi SE of Chariton.

LAKE SIZE: 64 Acres

Waterbody ID No.: IA 04-LDM-02296-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys of the DNR Fisheries Bureau, (2) results of DNR/Parks beach monitoring in 1999, and (3) results of fish tissue (RAFT) monitoring in 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report; both were assessed as FST for the 1994 report for the following reasons: (1) BPJ of DNR/EPD (Agena); (2) results of monitoring in 1990 show that average levels of secchi depth, chl-a, total-P, and TSS are better than overall averages for the 116 SPOLs sampled in 1990 and 1992; averages of secchi depth and chl-a are in best 10% of the 86 SPO impoundments; (3) according to Bachmann et al. (1994), lake has relatively low sedimentation rate (1.6 cm/yr) and long life expectancy (274 yrs) for an impoundment; (4) lake receives moderately high use for swimming and fishing; (5) fishkills are not a problem. Thus, lake appears to have no impairments to chemical or physical characteristics. Relatively high erosion rate in region (14 to 27 T/A/YR suggests a threat from ag-NPS; DSC (1991), however, suggests minimal problems w/ sheet/rill erosion.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, continued to use the assessment developed for the 1994 report (=FST). Comments from the DNR Fisheries Bureau suggest that water quality may be improving due to construction of new sedimentation pond and due to state control of most of the watershed of this lake. Results of the 1997 DNR/U.S. EPA "RAFT" fish contaminant monitoring program showed that levels of the relatively few contaminants detected in the composite sample of filets from largemouth bass were well below 1/2 of the respective FDA action levels and the DNR levels of concern for other fish contaminants. Thus, assess support of the fish consumption uses as "fully supporting."

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "fully supporting." The Class B(LW) aquatic life uses remained assessed as fully supported"; fish consumption remained assessed as "fully supported." EXPLANATION: Levels of indicator bacteria at Red Haw Lake beach were monitored approximately twice per week during summer 1999 by DNR Parks, Recreation and Preserves Division as part of a beach monitoring program at 11 state-owned lakes. Results of the 34 samples collected at this beach showed that levels of indicator bacteria (fecal coliforms) were very low compared to other Iowa lakes, with the overall geometric mean (13 orgs/100 ml) well below the state WQ criterion of 200 orgs/100 ml. The maximum level of fecal coliforms in the 34 samples was 120 orgs/100 ml on June 14, 1999; thus, no samples exceeded the state criterion of 200 orgs/100 ml. According to U.S. EPA guidelines for determining "full support" of primary contact uses (U.S. EPA 1997b, page 3-35), the geometric mean of fecal coliform bacteria levels should not exceed 200 orgs/100ml based on at least five samples in a 30-day period. In addition, not more than 10% of the total samples taken during any 30-day period should have a density that exceeds 400 orgs/100 ml. None of the sixteen 30-day periods during summer 1999 had geometric means (N = from 6 to 10 samples per period) greater than 200 orgs/100ml.; the maximum 30-day geometric mean was 23 orgs/100ml. No samples exceeded the EPA-recommended single sample maximum density for fecal coliform bacteria of 400 orgs/100ml. Thus, the Class A (primary contact recreation) uses were assessed as "fully supported." The Class B(LW) aquatic life uses remain assessed as "fully supported" based on review and approval of the previous (1998) assessments by the DNR Fisheries Bureau in 2000. Fish consumption uses remained assessed as fully supported (=FS) based on results of EPA/DNR fish tissue (RAFT) monitoring in 1997 that showed levels of all contaminants < 1/2 of respective FDA action levels and DNR levels of concern (see above).

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: LUCAS CO

South Colyn Marsh

Lucas County, S30,T71N,R20W, 3 mi. S of Russell.

LAKE SIZE: 98 Acres

Waterbody ID No.: IA 05-CHA-00316-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS primarily due to siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Williamson Pond

Lucas County, S27,T73N,R21W, 2 mi. E of Williamson.

LAKE SIZE: 30 Acres

Waterbody ID No.: IA 04-LDM-01995-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report; both were assessed as PS for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that average levels of secchi depth, total-P, and TSS are worse than overall averages for the 116 SPOLs sampled in 1990 and 1992 +/- 1 SD; i.e., lake has some of the poorest water quality of any SPOL in Iowa. Average level of chl-a was very low, probably due to shading from suspended sediment; (3) according to Bachmann et al. (1994), lake has a relatively high sedimentation rate (4.8 cm/yr) and a rel. short life expectancy (50 years); (4) they also report an impairment of "high turbidity"; (5) they also report no use for swimming at this lake. Much of the watershed is relatively steep, and some soil erosion can be expected.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessments from the 1994 and 1996 reports (above) were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain assessed as PS. At the recommendation of the DNR Fisheries Bureau, this lake was placed on the 1998 list of Section 303(d) waters due to levels of turbidity and organic enrichment that impair the Class A and Class B(LW) uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "partially supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: LYON CO

Lake Pahoja

Lyon County, S23,T99N,R48W, 5 mi SSW of Larchwood.

LAKE SIZE: 63 Acres

Waterbody ID No.: IA 06-BSR-00280-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses for L. Pahoja were assessed as PS.

For the 1994 report; both fishable and swimmable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that average levels of secchi depth, chl-a, and TSS are worse than overall means for the 116 SPOLs sampled in 1990 and 1992 but are within +/- 1 SD of the overall mean; the level of total-P (0.483 mg/l) is worse than the overall mean + 1 SD; thus, WQ of this lake tends toward the poor range of SPOLs in Iowa but is not among the poorest. (3) Bachmann et al. (1994) report relatively high numbers for swimming and fishing uses at the lake; (4) lake does not have problems with fishkills. Thus, the lake supports fishing and swimming uses but is definitely threatened by sediment and nutrients eroded from the nearly 90 % of the watershed in cropland.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class A primary contact and Class B(LW) aquatic life uses developed for the 1994 report (both =FST). This assessment was reviewed by the DNR Fisheries Bureau. DNR Fisheries biologist suggested that the water quality of this lake may be improving.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of recent fish contaminant monitoring at this lake. Fish tissue monitoring was last conducted at this lake for the 1989 EPA/DNR fish tissue (RAFT) monitoring program. Results from his monitoring are too old (greater than five years) for characterizing current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: MADISON CO

Badger Creek Lake

Madison County, S11,T77N,R27W, 9 mi. E of Earlham.

LAKE SIZE: 269 Acres

Waterbody ID No.: IA 04-LDM-03080-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys of the DNR Fisheries Bureau, (2) results of fish tissue (RAFT) monitoring in 1999, and (3) occurrence of a fish kill in September 1998. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report; Bachmann et al. (1994) shows that Badger Creek L. is not used for swimming; thus, this use was not assessed. Fishable uses were assessed as PS for the following reasons: (1) results of monitoring in 1992 show that averages of secchi depth, chl-a, and total-P are approx. equal to, or worse than, overall averages for the 116 SPOLs sampled in 1990 and 1992; the average level of TSS was better than the overall mean for SPOLs; (2) Bachmann et al. (1994) report relatively high use numbers for fishing at the lake; (3) lake does not have fishkill problems; (4) 95 percent of watershed is in approved soil conservation practices; (5) lake has a moderately low sedimentation rate and a moderately long life expectancy (122 years). DNR Fisheries believes that the rel. large watershed:lake area ratio impairs uses due to high levels of sediment delivered to the lake.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS).

For the 1998 report, the assessments from the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class B(LW) aquatic life uses were assessed as PS due to high levels of siltation and nutrients from nonpoint sources. Support of the Class A (primary contact recreation) uses remains "not assessed" due to lack of information. At the recommendation of the DNR Fisheries Bureau, this lake was placed on the 1998 list of Section 303(d) waters due to high levels of siltation and nutrients from nonpoint sources in the watershed.

For the 2000 report: SUMMARY: Continue to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1998 report ("partially supported"); support of Class A (primary contact uses) remains "not assessed" (lake not used for swimming); fish consumption uses are assessed as fully supported (=FS) based on results of fish tissue monitoring in 1999. EXPLANATION: A fish kill occurred during the biennial period on September 8, 1998; this kill was attributed natural conditions (summerkill); approximately 1,000 fish were killed. (A similar kill occurred on May 27, 1990, when an estimated 30,000 fish were killed). This lake is scheduled to be sampled as part of the ISU/DNR lake water quality monitoring project. Results of EPA/DNR fish tissue monitoring (RAFT) in 1999 showed very low levels of very few contaminants in the composite samples of filets from channel catfish and black crappie. The previous assessment of the Class B(LW) aquatic life uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: MADISON CO

Cedar Lake

Madison County, S19,T76N,R27W near Winterset.

LAKE SIZE: 90 Acres

Waterbody ID No.: IA 04-LDM-03085-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on information from the DNR Water Quality Bureau / Water Supply Section. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Partial		

BASIS FOR ASSESSMENT AND COMMENTS:

For 1994 report: Lake was sampled on Feb. 1, 1993; of the seven herbicides analyzed in samples from two locations, only atrazine was detected at 0.1 ug/l near the dam. Also received report of relatively high level of atrazine in Cedar Lake in early spring 1994; thus, assess DW use as FST.

For 1996 report, used information from Miller and Kennedy (1995) to again assess support of the Class C (drinking water) uses as FST due to (1) low levels of agricultural pesticides, including atrazine and cyanazine, detected in the water and sediment of Cedar Lake and (2) lack of any pesticide levels that exceeded MCLs.

For the 1998 report, continue to use the assessment of support of the Class C (drinking water) uses developed for the 1994 and 1996 reports (=FST). No information available for developing an assessment of support of the Class B(LW) aquatic life uses.

For the 2000 report: SUMMARY: Class C (drinking water) uses were assessed as "partially supported." The Class B(LW) aquatic life uses and fish consumption uses remained "not assessed." EXPLANATION: The Class B(LW) remained "not assessed" due to the lack of recent information on the status of aquatic life at this lake. Information from the the DNR Water Supply Section was used to assess support of the Class C (drinking water) uses as "partially supported" (=PS) due to issuance by the Winterset Municipal Water Works of three notices of MCL violations for nitrate in 1999 (April 22, May 12, and June 4). According to EPA and DNR methods for assessing support of Class C (drinking water) uses, one or more drinking water advisories lasting 30 days or less per year suggest that the Class C use is only partially supported (see pages 3-38 to 3-44 of U.S. EPA 1997b and the DNR assessment methodology for Section 305(b) reporting). Although levels of nitrate suggest a water quality impairment, levels of atrazine were relatively low and suggest only a "threat" to support of drinking water uses of this waterbody. The 1998 results of the Novartis "Iowa Voluntary Atrazine Monitoring Program" showed that the time-weighted mean level of atrazine in samples collected from the Winterset raw water source from January to December 1998 (1.2 ug/l, N=29, maximum=7.9 ug/l) was below the MCL of 3.0 ug/l. Based on DNR's Section 305(b) assessment methodology, if the average contaminant level in source water is less than the MCL, but a level in one or more samples is above the MCL, the Class C (drinking water) uses of the source water should be assessed as "fully supported / threatened." Due, however, to the three notices of MCL violations for nitrate in 1999, the Class C uses were assessed as "partially supported." Fish consumption used remained "not assessed" due to lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: MAHASKA CO

Hawthorn Lake

Mahaska County, S10,T77N,R14W, 1 mi S of Barnes City.

LAKE SIZE: 186 Acres

Waterbody ID No.: IA 03-NSK-00250-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Bachmann et al. (1994) show that the lake is not used for swimming; thus swimmable uses were not assessed. Fishable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1992 show that average levels of secchi depth and chl-a are approx equal to overall averages for the 116 SPOLs sampled in 1990 and 1992; average levels of total-P and TSS are better than overall averages. Thus, lake has average to above average WQ; (3) according to Bachmann et al. (1994), lake has a relatively low sedimentation rate (1.4 cm/yr) and long life expectancy (271 years) for an impoundment in southern Iowa; (4) lake does not have problems with fishkills. According to DSC, sediment and nutrient delivery to the lake in NPSP, while not excessive, is the major source of pollution.

For 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FST). Used results of fish contaminant monitoring conducted for the DNR/EPA Regional Ambient Fish Tissue (RAFT) monitoring program to assess support of fish consumption uses as FS due to levels of all contaminants less than 1/2 of FDA action levels in the composite samples of channel catfish and largemouth bass fillets.

For the 1998 report, continued to use the assessments of the Class B(LW) aquatic life uses (=FST) and fish consumption uses (=FS) developed for the 1994 and 1996 reports. The Class A primary contact recreation uses remain "not assessed."

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Fish consumption uses remain assessed as "fully supported." EXPLANATION: The level of support of the Class A (primary contact recreation) uses remained "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain assessed as "fully supported" based on the results of the 1995 EPA/DNR fish tissue (RAFT) monitoring. Levels of contaminants in the composite sample of fillets from channel catfish and largemouth bass were less than 1/2 of the respective FDA action levels and DNR levels of concern for organochlorine contaminants and mercury. Thus, fish consumption uses were assessed as "fully supported."

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: MAHASKA CO

Lake Keomah

Mahaska County, S13,T75N,R15W, 4.5 mi E of Oskaloosa.

LAKE SIZE: 84 Acres

Waterbody ID No.: IA 03-SSK-00120-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses of L. Keomah were assessed as PS.

For the 1994 report: Both fishable and swimmable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring data collected in 1990 show that average levels of secchi depth, total-P, chl-a, and TSS are better than overall averages for the 116 SPOLs sampled in 1990 and 1992; (3) according to Bachmann et al. (1994) lake has a relatively low sedimentation rate for an impoundment (2.1 cm/yr) and a relatively long life expectancy (146 years); they also report relatively high numbers for swimming; (4) lake does not have problems with fish kills. According to Bachmann et al., lake does have problems with aquatic vegetation; thus, lake is threatened by nuisance aquatic vegetation. DSC (1991) documents renovation of fishery in 1981, problems w/ crappie and BBH after renovation, and gradual improvement in the fishery.

For the 1996 report, used assessment of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (FST) developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class A primary contact and Class B(LW) aquatic life uses developed for the 1994 report (both=FST). This assessment was reviewed by the DNR Fisheries Bureau. The DNR Fisheries biologist noted that DNR has worked with NRCS to construct a new sediment control pond; thus, the water quality of this lake may be improving. At the recommendation of the DNR Fisheries Bureau, this lake was placed on the 1998 list of Section 303(d) waters due to siltation from nonpoint sources and due to excessive growth of aquatic macrophytes.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: MAHASKA CO

White Oak Conserv. Area Lake Mahaska County, S28,T75N,R14W, 4 mi SSW of Rose Hill.

LAKE SIZE: 21 Acres

Waterbody ID No.: IA 03-SSK-00118-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses for White Oak L. were assessed as PS.

For the 1994 report: Fishable uses were assessed as FST, and swimmable uses were not assessed for the following reasons: (1) results of ISU monitoring show that average levels of secchi depth, total-P, chl-A, and TSS are better than overall averages for the 116 SPOLs sampled in 1990 and 1992; (2) according to Bachmann et al. (1994), the lake has a relatively high sedimentation rate (3.1 cm/yr) and relatively long short expectancy (79 years) for a small impoundment; (3) lake does not have problems with fishkills and does not have problems with aquatic vegetation. According to Bachmann et al. (1994), the lake is not used for swimming; thus, no information exists to assess support of swimmable (Class A) uses.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FST).

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses remain "not assessed" due to lack of swimming uses at this lake, and the Class B(LW) aquatic life uses remain assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) remain "not assessed." Support of the Class B(LW) aquatic life uses is "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses remained "not assessed" due to the lack of swimming use at this lake (see assessment developed for the 1994 report above). The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed by the DNR Fisheries Bureau in 2000. Based on this review, the assessment of support of the aquatic life uses was changed to "partially supported" due to impacts from siltation and nutrients from agricultural nonpoint sources. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: MARION CO

Red Rock Reservoir

Marion County, S19,T76N,R18W near Pella.

LAKE SIZE: 19000 Acres

Waterbody ID No.: IA 04-LDM-0030-L

Waterbody Type: Freshwater Reservoir

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of monitoring conducted by Iowa State Univ. as part of the ACOE's Des Moines R./Saylorville Res./Red Rock Res. water quality study. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had no viols of Class B(WW) WQC (metals not analyzed for). Fecals at lake station & 5 of 6 beach stations showed FS; 1 station at WBB had 2 viols in 10 samples (=PS); combined w/ other data, assess as FST. No ISU fillet samples w/ contams > 1/2 FDA action levels; fish consumpt advis issued in Dec 89, however, remains in effect (=NS).

For 1994 report, had no viols of Class B(WW) WQC (no metals)(FS). No viols of fecals at lake station; only 2 of 84 samples at beaches in 1992-93 exceeded Class A WQC (=FS). No ISU fillet samples w/ contams > 1/2 FDA action levels; fish consumpt advis lifted in April 1993 (=FS). Reservoir, however, continues to have severe siltation problems resulting in periodic increases in normal pool elevations. Lutz (1993: 160) reports a fishkill at RR in late August 92; only CCAT killed; disease blamed.

For 1996 report, only 1 of 54 samples from North Overlook and Whitebreast beaches exceeded the Class A WQC of 200 orgs/100 ml (=FS). None of the 34 samples collected from near the dam exceeded Class B(WW) aquatic life water quality criteria (=FS). Levels of organochlorine contaminants and mercury in composite samples of carp fillets were well-below FDA action levels in 1994 and 1995, thus suggesting that fish consumption uses are fully supported. None of the 15 samples collected from near the dam and analyzed for fecal coliform bacteria exceeded the Class A water quality criterion (=FS). Despite excellent water quality, this reservoir continues to suffer from excessive siltation in the upper reaches; thus, assess support of the Class B(WW) aquatic life uses as PS due to siltation.

For the 1998 report, none of the 18 samples collected during summers of 96 & 97 exceeded the Class A primary contact rec. WQ criterion of 200 fecal coliforms/100 ml (geometric mean=3 orgs /100 ml; max value=31 orgs/100 ml). During the same period, only 1 of 54 samples collected during 18 sampling events at the three sites on North Overlook Beach exceeded the Class A WQ criterion (geometric means of 6, 7, & 7 orgs/100 ml). At Whitebreast Beach 4 of 54 samples (7.4%) exceeded the Class A WQ criterion, with geometric means of 8, 9, & 6 orgs/100 ml at the three sites. All data suggest full support of Class A uses. None of the 32 samples collected from Oct 95 to Sep 97 exceeded Class B(WW) WQ criteria for conventional pollutants & ammonia (=FS). Levels of pesticides in whole-fish composite samples of 3-yr old carp were well below 1/2 the respective FDA action levels (=FS of fish consumption uses). Lake is noted for crappie, catfish, largemouth bass & white bass fishing in the March/April 1998 Iowa Conservationist. Despite the apparent support of all designated uses, this lake receives high silt loads from its watershed, and the ACOE has had to raise the level of the conservation pool of the reservoir in response. Thus consider overall support of uses as FST.

For the 2000 report: SUMMARY: Continue to assess support of the Class A (primary contact recreation) uses as "fully supported." The Class B(WW) aquatic life uses were assessed as "fully supported," and the fish consumption uses were assessed as "fully supported." EXPLANATION: The assessments of support of the beneficial uses are based on results of water quality monitoring conducted by Iowa State University (under contract with the U.S. Army Corps of Engineers) as part of the Des Moines River Water Quality Study (see Lutz et al. 1999 and Lutz 2000). ISU/ACOE monitoring of levels of indicator bacteria (fecal coliforms) during summers of 1998 and 1999 at mid-lake near the dam and at three locations at each of the two swimming beaches (North Overlook and Whitebreast) showed that geometric mean levels of indicator bacteria were far below the state water quality criterion of 200 orgs/100 ml. Geometric means for the 1998-99 period were as follows: 4 orgs/ 100 ml at the mid-lake station (18 sampling events; max = 57 orgs/100 ml); 5 orgs/100 ml at North Overlook Beach (17 sampling events; max daily mean = 33 orgs/100 ml); 5 orgs/100 ml at Whitebreast Beach (17 sampling events; max daily mean = 79 orgs/100 ml). None of the combined 120 samples analyzed for fecal coliform bacteria exceeded the 200 orgs/100 ml WQ criterion to protect primary contact recreation uses. The Class B(WW) aquatic life uses were assessed as "fully supported." none of the 34 samples collected from the mid-lake (surface) station during the biennial period exceeded Class B(WW) WQ criteria for conventional parameters (dissolved oxygen, pH, and ammonia) (samples were not analyzed for toxic metals). Fish contaminant monitoring conducted in Red Rock Reservoir by ISU/ACOE in 1998 and 1999 showed that levels of contaminants (dieldrin, chlordane, alachlor, trifluralin, and chlorpyrifos) in composite samples of whole fish common carp were all less than 1/2 of the respective FDA action levels or DNR levels of concern. Thus, fish consumption uses were assessed as fully supported. For more information on ISU/ACOE water quality monitoring at Red Rock Reservoir, see Lutz et al. (1999) and Lutz (2000).

Lakes, Wetlands, and Flood Control Reservoirs: MARSHALL CO

Green Castle Lake

Marshall County, S8,T82N,R17W, 1 mi. S of Ferguson.

LAKE SIZE: 16 Acres

Waterbody ID No.: IA 02-IOW-00660-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses of Green Castle Lake were assessed as PS.

For the 1994 report: Fishable uses were assessed as FST and swimmable uses were not assessed for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that average levels of secchi depth, total-P, chl-a, and TSS are much better than overall averages for the 116 SPOLs sampled in 1990 and 1992; secchi depth is better than the overall mean + 1 SD; (3) Bachmann et al. (1994) report that the lake does not have problems with fishkills; (4) lake has a relatively low sedimentation rate (2.8 cm/yr) and relatively long life expectancy (101 years) for a small impoundment. Although designated for Class A uses, lake does not have a swimming beach and Bachmann et al. (1994) report zero swimming use for the lake; thus, swimmable uses not assessed. Lake threatened by nuisance algal blooms.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FST).

For the 1998 report, the assessment of support developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses remain "not assessed" due to lack of swimming uses at this lake (no beach area), and the Class B(LW) aquatic life uses remain assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) remain "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses remained "not assessed" due to the lack of swimming use at this lake (see assessment developed for the 1994 report above). The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs:

MILLS CO

Willow Slough

Mills County, S29,T73N,R40W, 3 mi. SW of Henderson.

LAKE SIZE: 150 Acres

Waterbody ID No.: IA 05-NSH-00820-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Wildlife Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts from siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, the assessment developed for the 1994 and 1996 report was reviewed and approved by the DNR Wildlife Bureau. Thus, the Class B(LW) aquatic life uses remain assessed as PS due to siltation impacts from agricultural nonpoint sources.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses were assessed as "fully supported / threatend." EXPLANATION: Based on a review of the previous (1998) assessment (see above) by the DNR Wildlife Bureau, the support of the Class B(LW) aquatic life uses was changed from "partially supported" to "fully supported / threatened." The primary threat remains siltation from agricultural nonpoint sources.

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Lakes, Wetlands, and Flood Control Reservoirs: MONONA CO

Badger Lake

Monona County, S29,T85N,R46W, 4 mi. WNW of Whiting.

LAKE SIZE: 380 Acres

Waterbody ID No.: IA 06-WEM-00450-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with high levels of nutrients delivered to the lake in nonpoint source runoff believed to threaten continued support of these uses.

For the 1996 report, used the assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, used the recommendation of the DNR Wildlife Bureau to downgrade the assessment of support of the Class B(LW) aquatic life uses from FST to "not supporting" due to hydrological habitat modifications and due to nonpoint source siltation.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Blackbird Bend

Monona County, S28,T85N,R47W, 10 mi. WNW of Whiting.

LAKE SIZE: 490 Acres

Waterbody ID No.: IA 06-WEM-00453-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as "not supported" (NS) due to siltation from agricultural nonpoint sources and due to habitat alterations (water level instability) due to hydrologic modification (degradation) of the Missouri River channel.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=NS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=NS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: MONONA CO

Blencoe Lake

Monona County, S31,T82N,R45W, 5 mi. SW of Blencoe

LAKE SIZE: 70 Acres

Waterbody ID No.: IA 06-WEM-00420-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as "not supporting" (NS) due to impacts of siltation from agricultural nonpoint sources and due to habitat alteration (water level instability) due to hydrologic modification (degradation) of the Missouri River channel.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=NS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1998 report (=NS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: MONONA CO

Blue Lake

Monona County, S35,T84N,R46W, 2 mi. W of Onawa.

LAKE SIZE: 228 Acres

Waterbody ID No.: IA 06-WEM-00445-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as FS for the 1992 report.

For the 1994 report: Both fishable and swimmable uses were assessed as FST for the following reasons: (1) results of ISU monitoring show that averages of total-P and secchi depth are slightly worse than overall averages for the 116 SPOLs sampled in 1990 and 1992 (although both total-P and secchi are within +/- 1 SD of the overall mean); thus, although average levels of chl-a and TSS are better than overall averages, the data suggest that Blue L. has approximately average water quality for SPOLs in Iowa; (2) Bachmann et al. (1994) report a summer fishkill frequency of 10 percent, thus suggesting a problem with organic enrichment; (3) water quality (especially secchi depth and chl-a) are too close to average to justify a FS assessment of swimmable uses.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, continued to use the assessments of support of the Class A primary contact uses (=FST) and Class B(LW) aquatic life uses (=FST) developed for the 1994 report. DNR Fisheries biologists have identified aquatic plants (macrophytes) as serious threat to the continued support of the Class A and Class B(LW) uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supporting / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Biologists with the DNR Wildlife Bureau have recently expressed concern that a planned diversion of water to Blue Lake will adversely affect the aquatic life and recreational uses of the lake. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: MONONA CO

Decatur Lake

Monona County, S17,T83N,R46W, 6 mi. WSW of Onawa.

LAKE SIZE: 800 Acres

Waterbody ID No.: IA 06-WEM-00430-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Not supporting
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) and Class A uses was assessed as NS due to impacts from habitat alterations (water level instability) due to hydrologic modification (degradataion) of the Missouri River channel.

For the 1996 report, used assessment of support of the Class A and Class B(LW) uses developed for the 1994 report (=NS).

For the 1998 report, continued to use the assessment of support of the Class A primary contact recreation uses and the Class B(LW) aquatic life uses developed for the 1994 report (both uses = NS). This assessment was reviewed and approved by the DNR Wildlife Bureau, who recommended that siltation from nonpoint sources, as well as hydrological habitat modification, be identified as the primary water quality impairments.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "not supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Louisville Bend

Monona County, S7,T83N,R46W, 6 mi. W of Onawa.

LAKE SIZE: 1180 Acres

Waterbody ID No.: IA 06-WEM-00446-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Not supporting
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as NS due to impacts of siltation from agricultural nonpoint sources and due to habitat alteration (water level instability) related to the hydrological modification (degradation) of the Missouri River channel.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=NS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=NS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: MONONA CO

Lower Decatur Lake

Monona County, S17,T83N,R46W, 6 mi WSW of Onawa.

LAKE SIZE: 3 Acres

Waterbody ID No.: IA 06-WEM-00428-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses were assessed as NS due to impacts from siltation from agricultural nonpoint sources and due to habitat alteration (water level instability) related to the hydrological modification (degradation) of the Missouri River channel.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=NS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=NS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Middle Decatur Lake

Monona County, S16,T83N,R46W, 5 mi. WSW of Onawa.

LAKE SIZE: 338 Acres

Waterbody ID No.: IA 06-WEM-00429-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

Fish Consumption -- Not assessed Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class A (primary contact) uses and the Class B(LW) aquatic life uses were both assessed as NS due to siltation from agricultural nonpoint sources and due to habitat alteration (water level instability) related to the hydrological modification (degradation) of the Missouri River channel.

For the 1996 report, used assessments of support for the Class A and Class B(LW) uses developed for the 1994 report (=NS).

For the 1998 report, continued to use the assessment of support of the Class A primary contact recreation uses and the Class B(LW) aquatic life uses (both=NS) developed for the 1994 report. This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: MONONA CO

Oldham Lake

Monona County, S13,T83N,R43W, 1 mi. N of Soldier.

LAKE SIZE: 15 Acres

Waterbody ID No.: IA 06-SOL-00170-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both swimmable and fishable uses of Oldham L. were assessed as PS.

For the 1994 report: Both swimmable and fishable uses were assessed as FST for the following reasons: (1) results of monitoring show that average levels of secchi depth and TSS are slightly worse than overall averages for the 116 SPOLs sampled in 1990 and 1992; average levels of chl-a and total-P are better than overall averages; thus, lake has approximately average water quality for SPOLs in Iowa; (2) lake does not have problems with fishkills; (3) lake supports relatively high amount of swimming uses. Lake has relatively high sedimentation rate (5.9 cm/yr) and relatively short life expectancy (52 years); thus, uses of the lake are threatened by siltation from NPS.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life use remain assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: MONONA CO

Rabbitt Island Lake

Monona County, S28,T85N,R47W, 10 mi. WNW of Whiting.

LAKE SIZE: 30 Acres

Waterbody ID No.: IA 06-WEM-00452-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as NS due to siltation from agricultural nonpoint sources and due to habitat alteration (water level instability) related to hydrological modification (degradation) of the Missouri River channel.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=NS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=NS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Upper Blencoe Bend

Monona County, S24,T82N,R46W, 4 mi. SW of Blencoe.

LAKE SIZE: 94 Acres

Waterbody ID No.: IA-WETLAND-40

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Not supporting Aquatic Life Support -- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, used the recommendation of the DNR Wildlife Bureau to assess support of the aquatic life uses of this wetland as "not supporting" due to siltation from nonpoint sources and due to hydrological habitat modifications. This wetland is not yet designated for Class B(LW) aquatic life uses in the Iowa Water Quality Standards.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: MONROE CO

Albia City Reservoir

Monroe County, S9,T72N,R17W, at Albia

LAKE SIZE: 80 Acres

Waterbody ID No.: IA 04-LDM-01395-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of the 1995 UHL survey of Iowa water supply reservoirs (Miller & Kennedy 1995). See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Threatened		

BASIS FOR ASSESSMENT AND COMMENTS:

Lake was sampled near inflow and near dam on Feb 9, 1993 for seven ag herbicides in water and sediment. Levels of atrazine and cyanazine were detected in water, and levels of atrazine were below the MCL. Levels of cyanazine (0.96 ug/l near inlet and 1.0 ug/l near dam) were relatively high compared to the other reservoirs. No herbicides were detected in sediment. The levels of atrazine and cyanazine in the Albia Reservoir were greater than levels in the two lakes known to have high levels of ag herbicides in summer: West Lake Osceola and Corydon Res (see West Lake file from Agena and Kalkhoff 1993). Although the evidence is circumstantial, the results of winter sampling suggest the strong possibility of high levels of these pesticides in the Albia Reservoir during summer. Additional monitoring is needed at Iowa's water supply reservoirs to accurately assess levels of pesticides.

For 1996 report, lake was sampled again for common ag pesticides in water and sediment at two locations on January 19, 1995. Levels of atrazine and cyanazine were lower than the average concentrations observed for all lakes in Miller and Kennedy's (1995) study; the MCL for atrazine was not exceeded. Low levels of atrazine and cyanazine were found in lake sediments. Study suggests that levels of pesticides declined relative to those February 1993. Nonetheless, will use the assessment of support of the Class C (drinking water) uses developed for the 1994 report (FST).

For the 1998 report, continued to use the assessment of support of the Class C (drinking water) uses developed for the 1996 report (=FST). No information available for developing an assessment of support of the Class A (primary contact recreation) uses or the Class B(LW) aquatic life uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain "not assessed." The Class C (drinking water) uses remain assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses remain "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The Class B(LW) remain "not assessed" due to the lack of recent information on the status of aquatic life at this lake. The assessment of support of the Class C (drinking water) uses remains based on the UHL survey of water supply reservoirs in 1995 (Miller and Kennedy 1995) (see assessment developed for the 1996 report above). Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: MONROE CO

LaHart Area

Monroe County, S21,T73N,R18W, 2 mi. SW of Lovilia.

LAKE SIZE: 33 Acres

Waterbody ID No.: IA-WETLAND-41

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for either the 1994 or 1996 reports.

For the 1998 report, comments from the DNR Wildlife biologist indicate that the aquatic life uses of this wetland are partially supported due to siltation from agricultural nonpoint sources.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: MONROE CO

Lake Miami

Monroe County, S20,T73N,R17W, 5 mi. SE of Lovilia.

LAKE SIZE: 140 Acres

Waterbody ID No.: IA 04-LDM-00270-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses of L. Miami were assessed as PS.

For the 1994 report: Fishable uses were assessed as FST and swimmable uses were "not assessed" for the following reasons: (1) results of monitoring show that average levels of total-P, TSS, and chl-a are approximately equal to overall averages for the 116 SPOLs sampled in 1990 and 1992; average secchi depth, however, was worse than the overall average; (2) lake does not have problems with fishkills; (3) lake has a relatively low sedimentation rate (2.1 cm/yr) and relatively long life expectancy (140 years) for an impoundment; (4) although designated for swimmable uses, lake does not have a swimming beach and swimming use was reported as zero in Bachmann et al. (1994). Thus, lake has approximately average WQ for Iowa SPOLs; low transparency probably not a problem for fishable uses. No problems with toxics in sediment, water, or fish tissue in 1990.

For the 1996 report, used assessments of support for the Class B aquatic life uses (FST) and fish consumption uses (=FS) developed for the 1994 report.

For the 1998 report, the assessments for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class B(LW) aquatic life uses remain assessed as FST, while the fish consumption uses remain assessed as FS. No information is available for assessing support of the Class A (primary contact) recreation uses (=NAS). At the recommendation of the DNR Fisheries Bureau, this lake was placed on the 1998 list of Section 303(d) waters due to water quality problems with siltation and nutrients from nonpoint sources.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) remained "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses remained "not assessed" due to the lack of information on levels of indicator bacteria at this lake (see assessments developed for the 1994 and 1996 reports above). The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses were changed from "fully supported" to "not assessed" due to the lack of recent fish contaminant monitoring at this lake. The most recent fish tissue monitoring was conducted in 1990 as part of the EPA/DNR fish tissue (RAFT) monitoring program. Although levels of contaminants in the composite sample of fillets from channel catfish were well below FDA action levels and DNR levels of concern, these data are now too old (greater than five years) for characterizing current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: MONTGOMERY

Viking Lake

Montgomery County, S6,T71N,R36W, 4 mi. E of Stanton.

LAKE SIZE: 137 Acres

Waterbody ID No.: IA 05-NOD-00930-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring show that average levels of secchi depth, TSS, and total-P were better than overall averages for the 116 SPOLs sampled in 1990 and 1992; level of chl-a was worse than the overall average and approached the poor end of the overall mean + 1 SD; (3) lake does not have problems with fishkills; lake has very low sedimentation rate (1.4 cm/yr) and very long life expectancy (323 years) for an impoundment; lake supports moderate amount of swimming use. Thus, lake has approximately average water quality for SPOLs in Iowa but has a potential problem with nuisance blooms of algae. DSC (1991) reports good WQ and fishery; sedimentation ponds have reduced siltation; sheet & rill erosion still a concern.

For the 1996 report, used assessment of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: MUSCATINE CO

Wiese Slough

Muscatine County, S24,T78N,R3W, 2 mi SE of Atalissa.

LAKE SIZE: 310 Acres

Waterbody ID No.: IA 02-CED-00220-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

[This wetland was inadvertently left out of post-1986 versions of the Iowa Water Quality Standards. This wetland was designated for Class B(w) uses in the 1986 WQS.]

For 1998 report, B(LR) use support upgraded from PS to FST based on recommendation of DNR Wildlife Biologist. Elevated nutrient levels delivered to the wetland in agricultural runoff are identified as the primary threat to continued full attainment of wetland use.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: O'BRIEN CO

Dog Creek Lake

O'Brien County, S29,T94N,R39W, 3 mi SE of Sutherland.

LAKE SIZE: 28 Acres

Waterbody ID No.: IA 06-LSR-00315-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys by the DNR Fisheries Bureau and (2) information from district soil conservationist. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report; both uses were assessed as FST for the 1994 report for the following reasons: (1) monitoring data show that average levels of secchi depth, total-P, and TSS are approximately equal to, or better than, overall average levels for the 116 SPOLs sampled in 1990 and 1992; average level of chl-a, however, was worse than the overall average but within 1 SD of the overall average; (2) fishkills are infrequent; (3) this relatively small lake supports relatively high usage for both fishing and swimming. Lake is threatened by sediment from agricultural NPS: lake has relatively high sedimentation rate (8.9 cm/yr) and short life expectancy (35 years) for an impoundment in Iowa. In March/April 1994 "Iowa Conservationist," lake is noted for good fishing for bluegill and LM bass. Lake suffers from an unfavorable watershed:lake area ratio of 115:1.

For the 1996 report, used assessment of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, continued to use the assessments of use support developed for the 1994 report (see above). These assessments were reviewed by the DNR Fisheries Bureau in 1998; no changes in the assessments were recommended.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "partially supported." The Class B(LW) aquatic life uses were assessed as "partially supported." Fish consumption uses were "not assessed." EXPLANATION: The Class A uses were considered "partially supported" due to information from the district soil conservationist that swimming use has declined at this lake in recent years in response to declining water quality. At the recommendation of the DNR Fisheries Bureau, the level of support for the Class B(LW) uses was changed from "fully supported / threatened" to "partially supported." This assessment is supported by information from the district soil conservationist that fishing use has declined in recent years. The water quality trend for this lake remains "stable" with some concern that the trend may be "declining." According to the DNR Fisheries Bureau, siltation from the unfavorably-large watershed of this lake remains a problem despite some implementation of nonpoint source controls. Water quality problems are attributed to organic enrichment, nuisance aquatic plants (algae). The fish consumption use remain "not assessed" due to lack of fish tissue monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: O'BRIEN CO

Mill Creek Lake

O'Brien County, S3,T95N,R41W, 0.25 mi E of Paullina

LAKE SIZE: 30 Acres

Waterbody ID No.: IA 06-LSR-01760-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both fishable and swimmable uses were assessed as FST for the following reasons: (1) results of monitoring show that average levels of secchi depth, chl-a, total-P, and TSS are better than overall averages for the 116 SPOLs sampled in 1990 and 1992; (2) lake does not have problems with fishkills; (3) levels of usage for both fishing and swimming are relatively high. Support of uses is threatened by agricultural NPS: lake has relatively high sedimentation rate (9.5 cm/yr) and very short life expectancy (16 years); presence of two sedimentation dikes, however, may alleviate sediment problems and extend the life of the impoundment. Lake suffers from an unfavorable watershed: lake area ratio (123:1).

For the 1996 report, used assessments of support for the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: OSCEOLA CO

Iowa Lake

Osceola County, S9,T100N,R39W, 4 mi NNW of Harris.

LAKE SIZE: 116 Acres

Waterbody ID No.: IA 06-LSR-01390-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST with high levels of siltation from agricultural nonpoint source runoff threatening continued support of this use.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FST). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Rush Lake

Osceola County, S36,T100N,R40W, 1 mi NE of Ocheyedan.

LAKE SIZE: 336 Acres

Waterbody ID No.: IA-WETLAND-42

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland is impacted by siltation and nutrients from agric. nonpoint sources. The use support status would be FST if the wetland was designated for B(LW) uses. For purposes of Section 305(b) reporting, consider the aquatic life uses of this wetland to be fully supported/threatened.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: OSCEOLA CO

Sutton Lake Marsh

Osceola County, S12,T99N,R40W, 1 mi SE of Ocheyedan.

LAKE SIZE: 52 Acres

Waterbody ID No.: IA-WETLAND-43

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for the 1994 or 1996 reports.

For the 1998 report, comments by the DNR Wildlife Biologist suggest that the aquatic life uses of this undesignated publicly-owned wetland are fully supported/threatened.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: PAGE CO

Pierce Creek Pond

Page County, S29,T70N,R39W, 4 mi N of Shenandoah.

LAKE SIZE: 33 Acres

Waterbody ID No.: IA 05-NSH-00220-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "not supporting" (NS).

For the 1994 report: Fishable uses were assessed as "partially supporting" (PS) and swimmable uses as "not assessed" (NAS) for the following reasons: (1) results of monitoring show that average levels of secchi depth, total-P, and TSS are worse than overall averages for the 116 SPOLs sampled in 1990 and 1992 with averages of secchi depth and TSS at or worse than the overall average +/- 1 SD; the average level of chl-a is better than the overall mean; (2) lake has relatively high sedimentation rate (7.1 cm/yr) and short life expectancy (26 years); (3) lake does support moderate amount of fishing; (4) lake is designated for swimmable uses but does not have a swimming beach, and swimming use was reported as zero by Bachmann et al. Thus, lake has relatively poor WQ that is impaired by suspended sediment, but the lake continues to support a recreational fishery.

For the 1996 report, used assessments of support of the Class B(LW) aquatic life uses (=PS) and the fish consumption uses (=FS) developed for the 1994 report.

For the 1998 report, the assessments of support developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses remain "not assessed" due to lack of swimming use of this lake, the Class B(LW) aquatic life uses remain assessed as PS due to impacts of siltation and nutrients from agricultural nonpoint sources, and the fish consumption uses remain assessed as FS based on results of 1993 RAFT fish tissue sampling. At the recommendation of the DNR Fisheries Bureau, this lake was placed on the 1998 list of Section 303(d) waters.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) remain "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Fish consumption uses were "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) remained "not assessed" due to the lack of swimming uses as this lake (see assessment developed for the 1994 report above). The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. The level of support of fish consumption uses was changed from "fully supported" to "not assessed" due to the lack of recent fish contaminant monitoring at this lake. This lake was last sampled for fish tissue in 1993 as part of the EPA/DNR fish tissue (RAFT) monitoring program. The data from this sampling are now too old (greater than five years) for characterizing current water quality conditions.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: PALO ALTO CO

Bluewing Marsh

Palo Alto County, S33,T97N,R34W, 3 mi NE of Ruthven.

LAKE SIZE: 130 Acres

Waterbody ID No.: IA-WETLAND-44

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate nutrients and siltation are threats to this wetland; recommends that the aquatic life uses of this wetland be assessed as FST.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Fallow Marsh

Palo Alto County, S25,T97N,R34W, 4 mi SW of Graettinger.

LAKE SIZE: 140 Acres

Waterbody ID No.: IA-WETLAND-45

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate nutrients and siltation are the primary threats to this wetland; recommended that aquatic life uses of this wetland be assessed as FST.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: PALO ALTO CO

Five Island Lake

Palo Alto County, S18,T96N,R32W, at Emmetsburg.

LAKE SIZE: 951 Acres

Waterbody ID No.: IA 04-UDM-03850-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as FST for the 1992 report; both were assessed as PS for the 1994 report for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 (pre-dredge) show some of the poorest water quality of any SPOL in Iowa; e.g., average levels of secchi depth chl-a, total-P, and TSS were all worse than overall averages for the 116 SPOLs sampled in 1990 and 1992 +/- 1 SD. Results from 1993 sampling (concurrent w/ dredging) showed that WQ ranged from approx average to worse than average for Iowa SPOLs in 1993; (3) Hoyman et al. (1994) report declines in uses for fishing and swimming due to excessive growth of macrophytes, poor water transparencies, and overabundance of rough fish (primarily carp and bullheads). Lake is currently being dredged as part of a Cleans Lakes Program restoration project. One of 60 surface samples sl. > chronic criterion for NH3 on VIII:29:93.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report. Dredging continues at this lake, and water quality conditions may be improving.

For the 1998 report, continue to use the assessments of support for the Class A primary contact recreation uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were considered "not assessed." The Class B(LW) aquatic life uses were assessed as "fully supported / threatened." Fish consumption uses were "not assessed." EXPLANATION: The Class A uses were considered "not assessed" due to lack of information on levels of indicator bacteria at this lake. At the recommendation of the DNR Fisheries Bureau, the Class B(LW) uses were changed from "partially supported" to "fully supported / threatened." The water quality trend for this lake is "improving." According to the DNR Fisheries Bureau, the water quality improvements at Five Island Lake reflect results of the lake dredging project. The fish consumption use remain "not assessed" due to lack of fish tissue monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: PALO ALTO CO

Lost Island Lake

Palo Alto County, S31,T97N,R34W, 3 mi N of Ruthven.

LAKE SIZE: 1147 Acres

Waterbody ID No.: IA 06-LSR-02390-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys of the DNR Fisheries Bureau and (1) results of fish tissue (RAFT) monitoring in 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as FST for the 1992 report and for the 1994 report for the following reasons: (1) BPJ of DNR Fisheries; (2) results on monitoring show that average levels of secchi depth, chl-a, and TSS are approx equal to or better than overall averages for the 116 SPOLs sampled in 1990 and 1992; the level of total-P, however, was worse than the overall average and approached the overall mean + 1 SD; (3) levels of use for fishing and swimming reported by Bachmann et al. (1994) are relatively high; (4) fishkills are reported as "infrequent"; (5) lake has a relatively low sedimentation rate (0.3 cm/yr) and a long life expectancy (1075 years). Thus, lake has relatively good water quality for a shallow natural lake and supports both fishing and swimming. Lake is threatened by resuspension of sediment and nutrients through wave action and by nuisance aquatic vegetation typical of shallow lakes.

For 1996 report, used assessments of support developed for the 1994 report for Class A (primary contact) uses (=FST) and for the Class B(LW) aquatic life uses (=FST). Used results of fish contaminant monitoring conducted in August 1994 for the Regional Ambient Fish Tissue (RAFT) monitoring program to assess support of the fish consumption uses as FS due to all contaminants at levels less than 1/2 the FDA action levels in the composite samples of filets from carp and from walleyes.

For the 1998 report, used assessments of support of the Class A primary contact recreation uses (=FST), Class B(LW) aquatic life uses (=FST), and fish consumption uses (=FS) developed for the 1994 and 1996 reports. Assessments were reviewed by the DNR Fisheries Bureau in 1998. DNR Fisheries suggested that primary threats to full support of designated uses were nutrients and organic enrichment from natural shallowness.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were considered "not assessed." Continue to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Fish consumption uses were assessed as fully supported. EXPLANATION: The Class A uses were considered "not assessed" due to a lack of information on levels of indicator bacteria for this lake. The Class B(LW) uses remained assessed as "fully supported / threatened" based on the assessments developed for previous reports (see above). This assessment was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1994 (see assessment for the 1998 report above). This lake is scheduled to be sampled as part of the ISU/DNR lake water quality monitoring project.

Lost Island Marsh

Palo Alto County, S31,T97N,R34W, 3 mi N of Ruthven.

LAKE SIZE: 250 Acres

Waterbody ID No.: IA-WETLAND-46

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
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BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for the 1994 or 1996 reports.

For 1998 report, comments of DNR Wildlife Biologist indicate nutrient inputs are the primary threat to this wetland. Biologist recommended that the aquatic life uses of this wetland be assessed as FST.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: PALO ALTO CO

Perkins Marsh

Palo Alto County, S29,T97N,R33W, 2.5 mi SW of Graettinger.

LAKE SIZE: 24 Acres

Waterbody ID No.: IA-WETLAND-47

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for the 1994 or 1996 reports.

For 1998 report, comments of DNR Wildlife Biologist indicate nutrients and siltation are the primary threats to this wetland; recommended that aquatic life uses be assessed as FST. For purposes of Section 305(b) reporting, the aquatic life uses of this wetland are considered to be FST.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: PALO ALTO CO

Silver Lake

Palo Alto County, S20,T95N,R34W, 2 mi W of Ayrshire.

LAKE SIZE: 664 Acres

Waterbody ID No.: IA 04-UDM-01020-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	--	Partial	Aquatic Life Support	--	Partial
Fish Consumption	--	Not assessed	Primary Contact (Recr)	--	Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as FST.

For the 1994 report: Swimmable uses were not assessed, and fishable uses were asses as PS for these reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring show that average levels of secchi depth, chl-a, total-P, and TSS are worse than overall averages for the 116 SPOLs sampled in 1990 and 1992; average levels of secchi depth, chl-a, and TSS are worse than the overall averages +/- 1 SD; (3) lake has a relatively low sedimentation rate (0.8 cm/yr) but has a relatively short life expectancy for a natural lake (189 years); (4) although designated for swimmable uses, the lake does not have a swimming beach, and Bachmann et al. (1994) report swimming use as zero; (5) lake has a winterkill frequency of 12 percent. Thus, lake has poor WQ for SPOLs, and organic loads combined with shallowness lead to fishkills that impair fishable uses.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class B(LW) aquatic life uses remain assessed as PS due to organic enrichment from naturally occurring internal nutrient recycling in this shallow glacial lake. The Class A (primary contact recreation) uses remain "not assessed" due to lack of swimming beach and swimming uses at this lake.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) remain "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) remained "not assessed" due to the lack of swimming uses at this lake (see assessment developed for the 1994 report above). The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: PALO ALTO CO

Virgin Lake

Palo Alto County, S30,T96N,R34W, 2 mi S of Ruthven.

LAKE SIZE: 200 Acres

Waterbody ID No.: IA 06-LSR-02330-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST with high levels of siltation from agricultural nonpoint source runoff and urban nonpoint source runoff threatening continued support of this use.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For 1998 report, comments of DNR Wildlife Biologist indicate siltation and nutrients from agricultural nonpoint sources are the primary threats to continued full attainment of B(LW) uses.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs:

POCAHONTAS

Little Clear Lake

Pocahontas County, S6,T91N,R34W, 11 mi W of Pocahontas.

LAKE SIZE: 187 Acres

Waterbody ID No.: IA 04-RAC-01620-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Wildlife Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS with high levels of nutrients from agricultural nonpoint source runoff threatening continued support of this use.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, continue to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses remained assessed as "partially supported." EXPLANATION: The Class B(LW) aquatic life uses remain assessed as "partially supported" based on review and approval of the previous (1998) assessment by the DNR Wildlife Bureau in 2000. A new water quality problem identified for this wetland is the non-native plant purple loosestrife.

Lizard Lake

Pocahontas County, S22,T91N,R34W, 4 mi SW of Gilmore City.

LAKE SIZE: 268 Acres

Waterbody ID No.: IA 04-UDM-03110-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based surveys of the DNR Wildlife Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST with high levels of siltation from agricultural nonpoint source runoff threatening continued support of this use.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, comments of DNR Wildlife Biologist indicate siltation caused by runoff from adjacent row crop fields is adversely impacting this wetland. B(LW) use support status was downgraded from FST to PS based on biologist's recommendation.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses remained assessed as "partially supported." EXPLANATION: The Class B(LW) aquatic life uses remain assessed as "partially supported" based on review and approval of the previous (1998) assessment by the DNR Wildlife Bureau in 2000. A new water quality problem identified for this wetland is the non-native plant purple loosestrife.

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Lakes, Wetlands, and Flood Control Reservoirs: POCAHONTAS

Shimon Marsh

Pocahontas County, S9,T90N,R34W, 3 mi SE of Varina.

LAKE SIZE: 105 Acres

Waterbody ID No.: IA-WETLAND-48

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Wildlife Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland is threatened by siltation from agricultural nonpoint sources; recommended that level of support of the aquatic life uses of this wetland are FST.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses remained assessed as "fully supported / threatened." EXPLANATION: The Class B(LW) aquatic life uses remain assessed as "partially supported" based on review and approval of the previous (1998) assessment by the DNR Wildlife Bureau in 2000. The non-native plant purple loosestrife was identified as a new water quality threat for this wetland.

Sunken Grove Lake

Pocahontas County, S8,T90N,R34W, 2.5 mi S of Varina.

LAKE SIZE: 185 Acres

Waterbody ID No.: IA 04-RAC-01610-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on survey of the DNR Wildlife Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS with high levels of siltation from agricultural nonpoint source runoff threatening continued support of this use.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report.

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland is impacted by siltation from agricultural nonpoint sources and an infestation of purple loosestrife. Biologist recommended assessment of Class B(LW) uses as PS.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses remained assessed as "partially supported." EXPLANATION: The Class B(LW) aquatic life uses remain assessed as "partially supported" based on review and approval of the previous (1998) assessment by the DNR Wildlife Bureau in 2000. A new water quality problem identified for this wetland is the non-native plant purple loosestrife.

Lakes, Wetlands, and Flood Control Reservoirs: POLK CO

Big Creek Lake

Polk County, S22,T81N,R25W, near Polk City

LAKE SIZE: 883 Acres

Waterbody ID No.: IA 04-UDM-0140-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on (1) surveys of DNR Fisheries Bureau, (2) results of DNR beach monitoring in 1999, and (3) results of fish tissue (RAFT) monitoring in 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report; both uses were assessed as FST for the 1994 report for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that average levels of secchi depth, chl-a, total-P, and TSS are better than overall averages for the 116 SPOLs sampled in 1990 and 1992; (3) all fish contams are < 1/2 FDA levels; (4) lake does not have problems with fishkills; (5) lake has a relatively low sedimentation rate (2.0 cm/yr) and a relatively long life expectancy (266 years) for an impoundment; (6) levels of use for both fishing and swimming report by Bachmann et al. (1994) are some of the highest for any SPOL in Iowa; (7) DNR's 1994 fishing forecast identifies Big Cr. L. as good to excellent for bluegill, crappie, LMB, and CCAT. Thus, this lake has above average WQ and well-above average use for fish. and swim. Lake is threatened by agricultural NPS.

For 1996 report, used assessments of support of the Class A (primary contact recreation) and Class B(WW) aquatic life uses developed for the 1994 report. Results of 1994 RAFT fish tissue monitoring show levels of all contaminants below 1/2 of FDA action levels (=FS). USDA has selected the watershed of Big Creek Lake as a potential site for a national swine research center; DNR believes that operation of the center would threaten the continued support of the designated uses of the lake. Existing ISU hog farm in the watershed of this lake is also believed to threaten water quality of the lake.

For the 1998 report, continued to assess support of the Class A primary contact recreation and Class B(WW) aquatic life uses as FST. Fish consumption uses remain assessed as FS based on results of the 1994 fish tissue (i.e., RAFT) sampling (see above). In July and August 1997, DNR conducted a special study of bacterial levels in the lake in response to high levels of fecal coliform bacteria at the lake's swimming beach. Sampling was conducted at 18 location including the beach, mid-lake, and in tributaries to the lake. Study results showed that (1) levels of fecal coliform bacteria at the beach were below the state Class A WQ criterion of 200 fecal coliforms / 100 ml, (2) levels of bacteria in lake tributaries were relatively high but were not the sources of bacteria seen at the beach, (3) mid-lake levels of bacteria were extremely low, (4) the highest levels of bacteria at the beach were at the ends of the beach that are used by a resident population of Canada geese, and (5) the most likely source of the fecal coliform bacteria at the beach is goose droppings. A report that summarizes this sampling was prepared. The proposed USDA swine research facility was not constructed in the Big Creek Lake watershed. The March/April 1998 Iowa Conservationist note that Big Creek Lake provide good angling opportunities for bluegill, largemouth bass, channel catfish, and crappie.

For the 2000 report: SUMMARY: Assessed support of the Class A (primary contact recreation) uses as "fully supported." The Class B(LW) aquatic life uses remained assessed as "fully supporting / threatened." Fish consumption uses remain assessed as "fully supporting." EXPLANATION: Levels of indicator bacteria at Big Creek beach were monitored approximately twice per week during summer 1999 by DNR Parks, Recreation and Preserves Division as part of a beach monitoring program at 11 state-owned lakes. Results of the 34 samples collected at Big Creek beach showed that levels of indicator bacteria (fecal coliforms) were generally low, with the overall geometric mean (38 orgs/100 ml) well below the state WQ criterion of 200 orgs/100 ml. The maximum level of fecal coliforms in the 34 samples was 770 orgs/100 ml on June 7, 1999; this was the only sample that exceeded the EPA-recommended single sample maximum density for fecal coliform bacteria of 400 orgs/100ml. None of the sixteen 30-day periods had geometric means (N from 6 to 10) greater than the state WQ standard of 200 orgs/100ml.; the maximum 30-day geometric mean was 38 orgs/100ml. Thus, the Class A (primary contact recreation) uses were assessed as "fully supported." The Class B(LW) aquatic life uses remain assessed as fully supporting / threatened based on review and approval of the previous (1998) assessment (see above) by the DNR Fisheries Bureau in 2000. Fish consumption uses remained assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1994 that showed levels of all contaminants were less than 1/2 of the respective FDA action levels and DNR levels of concern in the composite sample of fillets from channel catfish (see assessment for the 1996 report above).

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Lakes, Wetlands, and Flood Control Reservoirs: POLK CO

Easter Lake

Polk County, S19,T78,R23W, SE edge of Des Moines.

LAKE SIZE: 172 Acres

Waterbody ID No.: IA 04-LDM-00490-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys by the DNR Fisheries Bureau and (2) results of fish tissue (RAFT) monitoring in 1997. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "partially supported" (=PS).

For the 1994 report: Both fishable and swimmable uses were assessed as PS for the following reasons*: (1) results of ISU monitoring in 1990 show that average levels of secchi depth, chl-a, and total-P are approx. equal to, or better than, overall averages for the 116 SPOLs in Iowa sampled in 1990 and 1992; average level of TSS, however, was worse than the overall mean and approached 1 SD worse than the overall mean; (2) lake does not have problems with fishkills; (3) Bachmann et al. (1994) report relatively high levels of use for both fishing and swimming. Thus, the lake has relatively good water quality and supports both F and S uses. Miller & Kennedy reported a loss in lake volume from 1979-90 due to siltation; RAFT data show that levels of chlordane in bottom feeders are approx 75% of the FDA action level. *DNR Fisheries feels that lake is impaired by siltation; thus, assess as PS.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=PS), the Class B(LW) aquatic life uses (=PS), and fish consumption uses (=FST) developed for the 1994 report. Information from the report prepared by the Easter Lake Task Force (1995, Snyder & Associates and Dunbar/Jones Partnership) supports these assessments: sediment eroded from the watershed and deposited in the lake has reduced surface area from 220 acres in 1960 to 170 acres currently. Reductions in useable surface area and declines in water quality have contributed to an estimated 55% drop in beach use. The Easter Lake Task Force was formed to develop a program for preservation and enhancement of water quality in the lake and its tributaries.

For the 1998 report, continued to use assessments of support of the designated Class A primary contact recreation and Class B(LW) aquatic life uses developed for the 1994 and 1996 reports. Continue to assess support of Class A uses as PS due to drop in beach usage as described in the assessment for the 1996 report. Continue to assess support of Class B(LW) uses as PS due to recommendation of DNR Fisheries Bureau and due to news report that this lake continues to receive high levels of suspended silt during runoff events. An editorial in the August 11, 1997 Des Moines Register strongly suggests that the majority of the excess silt is coming from inadequate erosion controls at (1) housing developments and (2) road construction projects in the Easter Lake watershed. Thus, the cause/source information for this lake has been modified in this data base. As suggested by the DNR Fisheries Bureau, the water quality trend for this lake was changed from "stable" to "declining." The lake continues to support a recreational fishery. The March/April 1998 Iowa Conservationist notes that the lake supports good to excellent populations of largemouth bass, channel catfish, and crappie. 1997 RAFT mon. of CCAT & LMB showed v. low contam. levels.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were considered "not assessed." Continue to assess support of the Class B(LW) aquatic life uses as "partially supported." Fish consumption uses were assessed as fully supported. EXPLANATION: The Class A uses were considered "not assessed" due to a lack of information on levels of indicator bacteria for this lake. The Class B(LW) uses remained assessed as "partially supported" based on the assessments developed for previous reports (see above). The previous assessment of the Class B(LW) aquatic life uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. The DNR Fisheries Bureau added that some improvement has occurred with regard to reductions of urban nonpoint sources to this lake due to city actions, but the general trend remains "declining." Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1997 (see assessment for the 1998 report above). This lake is scheduled to be sampled as part of the ISU/DNR lake water quality monitoring project.

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Lakes, Wetlands, and Flood Control Reservoirs: POLK CO

Fort Des Moines Park Pond

Polk County, S33,T78N,R24W, at Des Moines.

LAKE SIZE: 14 Acres

Waterbody ID No.: IA 04-LDM-03030-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of DNR fish tissue monitoring in 1995. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Not assessed

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for either the 1994 or 1996 reports, although fish consumption uses were "fully supported" due to fish tissue monitoring conducted by DNR Fisheries Bureau in 1995.

For the 1998 report, no additional information available; continue to assess support of the fish consumption uses as FS.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses remain "not assessed. The fish consumption uses remain "fully supported." EXPLANATION: The Class B(LW) uses remain "not assessed" due to lack of information on the status of aquatic communities of this lake. Continue to assess support of the fish consumption uses as "fully supported" based on results of fish tissue monitoring conducted in June 1995 by the DNR Fisheries Bureau. This monitoring was conducted in response to concerns that fish from this lake contained high levels of contaminants that would pose a health risk to human consumers. Results showed that levels of all of the 26 contaminants analyzed for in the sample of largemouth bass were well below FDA action levels and DNR levels of concern. The only contaminants detected were DDE (0.073 ppm) and methoxychlor (0.22 ppm). The level of neither contaminant is believed to present a health risk to human consumers of fish from this lake. The level of DDE (0.073 ppm) is well below both the FDA action level of 5.0 ppm and the DNR level of concern of 2.5 ppm. The level of methoxychlor (0.22 ppm), although relatively high for this seldom-detected contaminant of Iowa fish, does not present a human health risk. Methoxychlor does not have an FDA action level, is considered by EPA as "not classifiable" to human carcinogenicity (Class D), and is not identified as a contaminant of concern in U.S. EPA's "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Volume II: Risk Assessment and Consumption Limits" (U.S. EPA 1994). Thus, the fish consumption uses remain "fully supported."

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: POLK CO

Saylorville Reservoir

Polk County, Saylorville Dam to Polk-Dallas county line.

LAKE SIZE: 5950 Acres

Waterbody ID No.: IA 04-UDM-0020-L

Waterbody Type: Freshwater Reservoir

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of monitoring at Saylorville Res. conducted by Iowa State Univ. as part of the ACOE's Des Moines R./Saylorville Res./Red Rock Res. water quality study. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, had no violations of Class B(WW) WQC (metals not sampled). All fish contams in fillet samples < 1/2 FDA levels; however, levels of dieldrin in WF samples in 91=293 & 287 ppb; thus assess fish consumption uses as FST. Only 2 of 92 samples contained fecal coliforms > Class A WQC. When combined w/ BPJ of DNR field staff, reservoir was assessed as FST.

For 1994 report, had no violations of Class B(WW) WQC (metals not sampled). All fish contams in fillet samples < 1/2 FDA levels (=FS). Only 1 of 100 samples contained fecal coliforms > Class A WQC (=FS). Support of uses at reservoir continue to be threatened by siltation from agricultural NPS (=FST).

For 1996 report, had no violations of Class B(WW) WQC (metals not sampled). All fish contams in samples of carp (fillets and whole fish) were < 1/2 FDA action levels for dieldrin, chlordane and mercury (=FS). None of the 16 samples from mid-reservoir, and none of the 51 samples each collected at the two swimming beaches during summer seasons of 1994 and 1995, exceeded the Class A WQC of 200 organisms per 100 ml (=FS). Support of the aquatic life and swimmable uses at Saylorville Reservoir continue to be threatened by siltation from agricultural nonpoint sources.

For the 1998 report, had no violations of the Class A primary contact recreation WQ criterion of 200 fecal coliforms / 100 ml in the 18 samples collected at mid reservoir near the dam during summers of 1996 and 1997 (geometric mean= 3 orgs/100 ml; max = 14 orgs/100 ml). Sampling at beaches during the same period showed (1) no violations of the Class A WQ criterion in the 51 samples from 17 sampling events at three sites Oak Grove Beach (geometric means of 2, 3, and 3 orgs/100 ml at the three sites; max of 57 orgs/100 ml) and (2) no violations of the Class A WQ criterion in the 51 samples from the three sites at Sandpiper Beach (geometric means of 5 orgs/100 ml at all sites; max of 82 orgs/ 100 ml). These results suggest full support (FS) of Class A uses. Only 1 of the 33 samples coll. between Oct 95 & Sep 97 exceeded a Class B(WW) WQ criterion for conventional parameters or ammonia: the sample from Aug. 20, 1996 contained 4.71 mg/l of dissolved oxygen, thus violating the Class B(WW) WQ criterion of 5.0 mg/l. This single violations (3% of samples) does not suggest a WQ impairment; thus, assess support of the Class B(WW) aquatic life uses as FS. Levels of pesticides in composite samples of 3-yr old whole-fish carp were well below 1/2 of FDA action levels in both the 1996 & 97 samplings; thus, fish consumption uses assessed as FS. Lake noted for excellent fishing for crappie and channel catfish, as well providing good populations of walleye, largemouth bass and white bass in the Mar/Apr 98 Iowa Conservationist. Support of the Class B(WW) & Class A uses continues to be threatened by agricultural NPSs.

For the 2000 report: SUMMARY: Continue to assess support of the Class A (primary contact recreation) uses as "fully supported." The Class B(WW) aquatic life uses were assessed as "fully supported / threatened," and the fish consumption uses were assessed as "fully supported." EXPLANATION: The assessments of support of the beneficial uses are based on results of water quality monitoring conducted by Iowa State University (under contract with the U.S. Army Corps of Engineers) as part of the Des Moines River Water Quality Study (see Lutz et al. 1999 and Lutz 2000). ISU/ACOE monitoring of levels of indicator bacteria (fecal coliforms) during summers of 1998 and 1999 at mid-lake near the dam and at three locations at each of the two swimming beaches (Sandpiper and Oak Grove) showed that geometric mean levels of indicator bacteria were far below the state water quality criterion of 200 orgs/100 ml. Geometric means for the 1998-99 period were as follows: 3 orgs/ 100 ml at the mid-lake station (18 sampling events; max = 58 orgs/100 ml); 6 orgs/100 ml at Oak Grove Beach (17 sampling events; max daily mean = 51 orgs/100 ml); 10 orgs/100 ml at Sandpiper Beach (17 sampling events; max daily mean = 733 orgs/100 ml). Only two of the combined 120 samples exceeded the U.S. EPA recommended single-sample maximum value of 400 organisms/100 ml; both of these high levels (880 and 1,040 orgs/100 ml) occurred at Sandpiper Beach during the July 7, 1998 sampling event. These high levels at Sandpiper Beach did not result any 30-day geometric means greater than the WQ criterion of 200 orgs/100 ml, with the worst-case 30-day period from June 2 to July 7, 1998 (n=4) having a geometric mean of 88 orgs/100 ml. The Class B(WW) aquatic life uses were assessed as "fully supported / threatened." Two of the 33 samples from the mid-lake (surface) station during the biennial period exceeded the Class B(WW) WQ criterion for dissolved oxygen of 5.0 mg/l. These violations occurred on August 31 (4.54 mg/l) and September 7, 1999 (4.88 mg/l). According to U.S. EPA guidelines for Section 305(b) water quality assessments (U.S. EPA 1997b, page 3-17), the percentage of violations at the mid-lake station (6%) does not suggest a water quality impairment. No violations occurred for the other Class B(WW) WQ parameters (pH, ammonia) in the 33 samples analyzed for at this station. Due to the violations of the WQ criterion for dissolved oxygen in reservoir surface samples in 1998, the assessment of support of the Class B(WW) aquatic life uses was downgraded from "fully supported" to fully supported / threatened. This change in assessment presumes a minor water quality impact and does not indicate a declining trend in water quality. Fish contaminant monitoring conducted in Saylorville Reservoir by ISU/ACOE in 1998 and 1999 showed that levels of contaminants (dieldrin, chlordane, alachlor, trifluralin, and chlorpyrifos) in composite samples of whole fish common carp were all less than 1/2 of the respective FDA action levels or DNR levels of concern. Thus, fish consumption uses were assessed as fully supported. For more information on ISU/ACOE water quality monitoring at Saylorville Reservoir, see Lutz et al. (1999) and Lutz (2000).

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Lakes, Wetlands, and Flood Control Reservoirs:

POTTAWATTAMI

Arrowhead Pond

Pottawattamie County, S29,T77N,R41W, 1.5 mi SE of Neola

LAKE SIZE: 14 Acres

Waterbody ID No.: IA 06-WED-00270-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as FST.

For the 1994 report: Fishable use was assessed as PS based upon the recommendation of DNR Fisheries. Results of monitoring in 1990 show that average levels of chl-a, total-P, and TSS are better than overall averages for the 116 SPOLs sampled in 1990 and 1992; the average secchi depth, however, was worse than the overall average but was within 1 SD of the overall mean. Lake does not have problems with fishkills. Although designated for swimmable uses, the lake does not have a swimming beach and Bachmann et al. (1994) report swimming use as zero; thus, swimmable uses were not assessed. Lake is in an area of high rates of soil erosion; thus, sedimentation rate is rel. high (7.9 cm/yr) and life expectancy of this 14 acre impoundment is relatively short (26 years). Thus, lake is impaired by sedimentation from agricultural NPS.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses remain "not assessed" due to lack of swimming at this lake, and the Class B(LW) uses remain assessed as PS due to siltation from agricultural nonpoint sources. At the recommendation of the DNR Fisheries Bureau, this lake was placed on the 1998 list of Section 303(d) waters.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) remain "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses remained "not assessed" due to the lack of swimming uses at this lake (see assessment developed for the 1994 report above). The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: POTTAWATTAMI

Carter Lake

Pottawattamie County, S23,T75N,R44W, at Carter Lake.

LAKE SIZE: 315 Acres

Waterbody ID No.: IA 06-WEM-00265-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau and by fish tissue monitoring conducted by the Nebraska Department of Environmental Quality.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Partial
Fish Consumption	-- Not supporting	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "partially supported" (PS).

For the 1994 report: Both fishable and swimmable uses were assessed as PS for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring show that average level of secchi depth (0.05 m) is one of the lowest average secchi depth of any SPOL sampled in 1990 and 1992 and is worse than the overall average of the 116 SPOLs sampled - 1 SD; the average level of chl-a was approx equal to the overall average and does not appear to explain the exceptionally low secchi depth; levels of total-P and TSS were better than the overall averages of the 116 SPOLs; (3) lake has a fishkill frequency (both winter & summer) of 10 percent. The watershed of Carter Lake is 100% urban; thus, impairments likely due contribution from urban NPSP. Relatively high levels of use for fishing reported by Bachmann et al. (1994) contradict assessment as PS.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, have no additional WQ information for updating the assessment of support of the Class A primary contact or Class B(LW) aquatic life uses; thus, continue to use the assessment of support of these uses developed for the 1994 report (PS).

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Fish consumption uses were assessed as "not supported." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "partially supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption were assessed as "not supported" due to the existence of a fish consumption advisory for this lake issued by the state of Nebraska due to high levels of PCBs (see the following web site: <http://ngp.ngpc.state.ne.us:80/fish/fishguide/fishcons.html>).

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Lakes, Wetlands, and Flood Control Reservoirs:

POTTAWATTAMI

Lake Manawa

Pottawattamie County, S13,T74N,R44W, S edge Council Bluffs

LAKE SIZE: 714 Acres

Waterbody ID No.: IA 06-WEM-00235-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on results of (1) surveys by the DNR Fisheries Bureau, (2) DNR/Parks beach monitoring in 1999, and (3) fish tissue (RAFT) monitoring in 1996. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as FST for the 1992 report; both assessed as FST for the 1994 report for the following reasons: (1) BPJ of DNR Fisheries; (2) average levels of total-P, chl-a, and TSS were better than overall averages for the 116 SPOLs sampled in 1990 and 1992 but were within 1 SD of the overall averages; the average level of secchi depth was worse than the overall average but was within 1 SD of the overall average; (2) lake does not have problems with fishkills with the exception of winterkills of shad in one of five years; (3) Bachmann et al. (1994) report moderately high numbers for swimming use and very high numbers for fishing use; (4) lake has a relatively low sedimentation rate and rel. long life expectancy (613 years). Low secchi depth not related to chl-a suggests a threat from turbidity; supplemental water is required to maintain lake levels; fishery apparently in good shape.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST), the Class B(LW) aquatic life uses (=FST), and the fish consumption uses (=FST) developed for the 1994 report.

For the 1998 report, used assessments of support of the Class A primary contact recreation uses (=FST) and Class B(LW) aquatic life uses (=FST) developed for the 1994 report. Based on results of sampling for the 1996 Regional Ambient Fish Tissue (RAFT) monitoring program, assessed fish consumption uses as FS: levels of all contaminants in the composite samples of fillets of largemouth bass and carp were well-below 1/2 the respective FDA action levels. The March/April 1998 Iowa Conserationist notes that Lake Manawa provide good angling opportunities for bullheads, yellow bass, walleye/saugeye, channel catfish, and crappie. Assessments of support reviewed by the DNR Fisheries Bureau in 1998.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "fully supporting." The Class B(LW) aquatic life uses remained assessed as fully supported / threatened"; fish consumption remained assessed as "fully supported." EXPLANATION: Levels of indicator bacteria at Lake Manawa beach were monitored approximately twice per week during summer 1999 by DNR Parks, Recreation and Preserves Division as part of a beach monitoring program at 11 state-owned lakes. Results of the 33 samples collected at this beach showed that levels of indicator bacteria (fecal coliforms) generally low, with the overall geometric mean (19 orgs/100 ml) well below the state WQ criterion of 200 orgs/100 ml. The maximum level of fecal coliforms in the 33 samples was 200 orgs/100 ml on July 12, 1999; thus, no samples exceeded the state criterion of 200 orgs/100 ml. According to U.S. EPA guidelines for determining "full support" of primary contact uses (U.S. EPA 1997b, page 3-35), the geometric mean of fecal coliform bacteria levels should not exceed 200 orgs/100ml based on at least five samples in a 30-day period. In addition, not more than 10% of the total samples taken during any 30-day period should have a density that exceeds 400 orgs/100 ml. None of the sixteen 30-day periods during summer 1999 had geometric means (N = from 6 to 10 samples per period) greater than 200 orgs/100ml.; the maximum 30-day geometric mean was 39 orgs/100ml. No samples exceeded the EPA-recommended single sample maximum density for fecal coliform bacteria of 400 orgs/100ml. Thus, the Class A (primary contact recreation) uses were assessed as "fully supported." The Class B(LW) aquatic life uses remain assessed as "fully supported / threatened" based on review and approval of the previous (1998) assessments by the DNR Fisheries Bureau in 2000. Fish consumption uses remained assessed as fully supported (=FS) based on results of EPA/DNR fish tissue (RAFT) monitoring in 1996 that showed levels of all contaminants < 1/2 of respective FDA action levels and DNR levels of concern (see above).

Lakes, Wetlands, and Flood Control Reservoirs:

POWESHIEK CO

Arbor Lake

Poweshiek County, S20,T80N,R16W, W edge of Grinnell

LAKE SIZE: 14 Acres

Waterbody ID No.: IA 03-NSK-00330-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "partially supported" (PS).

For the 1994 report: Both fishable and swimmable uses were assessed as "not supported" (NS) for the following reasons: (1) Bachmann et al. (1994) make the following statements regarding Arbor Lake: "There are frequent algal blooms and siltation is a serious problem. Because of the poor water quality, the fish are unfit to eat and swimming is prohibited." Monitoring in 1990, however, suggests that the lake has approximately average WQ for Iowa SPOLs: average levels of secchi depth and TSS are approx equal to or better than overall averages for the 116 SPOLs sampled in 1990 and 1992; average levels of chl-a and total-P are worse, but just slightly, than the overall averages. The lake has a relatively high sedimentation rate (7.6 cm/yr) and rel. short life expectancy (28 years) for SPOL impoundments. Based on info in Bachmann et al., lake uses were assessed as NS.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=NS), the Class B(LW) aquatic life uses (=FST), and the fish consumption uses (=NS) developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class A primary contact recreation uses (=NS), the Class B(LW) aquatic life uses (=FST), and the fish consumption uses (=NS) developed for the 1994 report. Previous Section 305(b) assessments were reviewed and approved by the DNR Fisheries Bureau. This list was placed on the 1998 list of Section 303(d) waters at the recommendations of the DNR Fisheries and Water Quality bureaus.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) remained assessed as "not supported." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Fish consumption uses were "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses remained assessed as "not supporting." This assessment remains based upon the statement from Bachmann et al. (1994) that swimming is prohibited at this lake due to poor water quality (see assessment developed for the 1994 report above). The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. The level of support of fish consumption uses was changed from "not supported" to "not assessed" due to the lack of fish contaminant monitoring at this lake. See accounts in Bachmann et al. (1980) and Bachmann et al. (1994) for more information on water quality problems at Arbor Lake.

Lakes, Wetlands, and Flood Control Reservoirs: POWESHIEK CO

Diamond Lake

Poweshiek County, S2,T78N,R15W, approx 2.5 mi SE Montezuma.

LAKE SIZE: 98 Acres

Waterbody ID No.: IA 03-NSK-00242-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys of DNR Fisheries Bureau, (2) results of 1995 survey of water supply reservoirs (Miller & Kennedy 1995), and (3) the 1998 "Iowa Voluntary Atrazine Monitoring Program. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Drinking Water Supply	-- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Fishable uses were assessed as PS.

For the 1994 report: Fishable uses were assessed as FST for the following reasons: (1) results of monitoring in 1990 show that average levels of secchi depth, chl-a, total-P, and TSS are better than overall averages for the 116 SPOLs sampled in 1990 and 1992; (2) lake does not have problems with fishkills; (3) lake has a relatively low sedimentation rate and relatively long life expectancy (109 years) for an impoundment; (4) Bachmann et al. (1994) report rel. high numbers for fishing use; (5) DNR's 1994 fishing forecast in the "Iowa Conservationist" recommends Diamond Lake for bluegill, channel catfish, and crappie. Lake is not designated for swimmable uses and Bachmann et al. report swimming use as zero. Sampling for 7 ag herbicides in Jan 1993 showed low levels of atrazine and cyanazine (both < 0.4 ug/l) in water; no detects in sediment. WQ trend in stable (DSC 1991).

For 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FST). Used results of sampling in January 1995 reported by Miller and Kennedy (1995) to assess support of the Class C (drinking water) uses as FST due to (1) detection of only two of the eight herbicides monitored, (2) presence of relatively low levels of atrazine (0.25 ug/l (inlet) and 0.26 ug/l (dam)) and cyanazine (0.1 ug/l, dam), and (3) absence of violations of MCLs.

For the 1998 report, the assessments of support of the Class B(LW) aquatic life uses developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class B(LW) uses remain assessed as FST. Continue to assess support of the Class C (drinking water) uses as FST based on assessments developed for the 1994 and 1996 reports. The Montezuma Municipal Water Supply issued a drinking water advisory for cyanazine in June 1996 due to a level (1.88 ug/l) that exceeded the U.S. EPA lifetime health advisory level of 1 ug/l. Health advisory levels are non-enforceable; cyanazine is not regulated under the federal Safe Drinking Water Act; the Iowa Water Quality Standards do not specify an MCL for this pesticide.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses remain assessed as "fully supported / threatened." The Class C (drinking water) uses remain assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses was reviewed and approved by the DNR Fisheries Bureau in 2000. The assessment of support of the Class C (drinking water) uses was based on (1) the UHL survey of water supply reservoirs in 1995 (Miller and Kennedy 1995) (see assessment developed for the 1996 report above) and (2) the 1998 results of the Novartis "Iowa Voluntary Atrazine Monitoring Program." This monitoring showed that the time-weighted mean level of atrazine in samples collected from the Montezuma raw water source from January to December 1998 (1.6 ug/l, N=31, maximum=4.2 ug/l) was below the MCL of 3.0 ug/l. Based on DNR's Section 305(b) assessment methodology, if the average contaminant level in source water is less than the MCL, but a level in one or more samples is above the MCL, the Class C (drinking water) uses of the source water should be assessed as "fully supported / threatened." Thus, the Class C uses of Diamond Lake were assessed as "fully supported / threatened." Fish consumption uses were "not assessed due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: RINGGOLD CO

Loch Ayr

Ringgold County, S30,T69N,R29W, 2 miles N of Mt. Ayr.

LAKE SIZE: 95 Acres

Waterbody ID No.: IA 05-GRA-01920-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on (1) 1995 UHL survey of Iowa water supply reservoirs and (2) 1998 "Iowa Voluntary Atrazine Monitoring Program." See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Threatened		

BASIS FOR ASSESSMENT AND COMMENTS:

Lake was monitored near dam and at inlet on Feb 3, 1993, for 7 ag herbicides in water and sediment. According to Miller and Kennedy (1993: 33), low levels of atrazine [0.44 ug/l] were found in water and sediment at both locations. None of the other herbicides were detected. Additional monitoring is needed to determine levels of herbicides during summer. Because level of atrazine in water were < 1/2 MCL, DW uses were assessed as FST.

For 1996 report, used results of sampling for eight common agricultural herbicides in January 1995 as reported in Miller and Kennedy (1995) to assess support of the Class C (drinking water) uses as FST due to levels of atrazine below the MCL. Levels of four herbicides (atrazine, cyanazine, metolachlor and simazine) and two atrazine metabolites were detected. Levels of atrazine in water were approx twice the average level of 1.03 ug/l for all 19 lakes, with levels in Loch Ayr ranging from 1.9 to 2.1 ug/l. Levels of cyanazine (0.44 to 0.56 ug/l (dam and inlet)) were approx 1/2 the average concentration for all lakes. Levels in finished water were lower than lake levels probably due to use of powdered activated carbon in the treatment process.

For the 1998 report, continued to use the assessment of support of the Class C (drinking water) uses (=FST) developed for the 1994 and 1996 reports. No information available for developing assessments of support of the Class A (primary contact recreation) uses or the Class B(LW) aquatic life uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain "not assessed." The Class C (drinking water) uses remained assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses remain "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The Class B(LW) remain "not assessed" due to the lack of recent information on the status of aquatic life at this lake. The assessment of support of the Class C (drinking water) uses was based on (1) the UHL survey of water supply reservoirs in 1995 (Miller and Kennedy 1995) (see assessment developed for the 1996 report above) and (2) the 1998 results of the Novartis "Iowa Voluntary Atrazine Monitoring Program." This monitoring showed that the time-weighted mean level of atrazine in samples collected from January to December 1998 (2.8 ug/l, N=30, maximum=10.5 ug/l) was below the MCL of 3.0 ug/l. Based on DNR's Section 305(b) assessment methodology, if the average contaminant level in source water is less than the MCL, but a level in one or more samples is above the MCL, the Class C (drinking water) uses of the source water should be assessed as "fully supported / threatened." Thus, the Class C uses of Loch Ayr were assessed as "fully supported / threatened." Based on results of the "Iowa Voluntary Atrazine Monitoring Program," the levels of atrazine in raw and finished water from Loch Ayr are some of the highest known in Iowa water supply reservoirs. Thus, this lake is a candidate for inclusion on Iowa's Section 303(d) list of impaired waters. Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: RINGGOLD CO

Walnut Creek Marsh

Ringgold County, S17,T68N,R30W, 4 mi WSW of Mount Ayr.

LAKE SIZE: 60 Acres

Waterbody ID No.: IA 05-GRA-01950-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For 1992 report, assessed as partially supporting aquatic life uses due to agricultural nonpoint sources (sediment, nutrients, and pesticides).

For 1994 report, used the assessment of support of the Class B(LW) aquatic life uses developed for the 1992 report (=PS).

For the 1996 report, continue to use the 1992 and 1994 assessments of aquatic life use (PS). This lake, however, was one of the earliest lakes in Iowa to have an infestation with Eurasian millfoil. According to the March/April 1997 Iowa Conservationist, this infestation has successfully been eradicated.

For the 1998 report, continue to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau. The Wildlife biologist noted that the wetland was chemically treated for Eurasian water millfoil 3 years ago and that no millfoil has been observed since.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: SAC CO

Arrowhead Lake

Sac County, S4,T86N,R36W, S edge of Lake View.

LAKE SIZE: 35 Acres

Waterbody ID No.: IA 04-RAC-00480-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys by the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as FS.

For the 1994 report: Fishable use assessed as FS and swimmable uses were not assessed for the following reasons: (1) BPJ of DNR Fisheries; (2) average levels of secchi depth, total-P, and sedimentation rate are in the best 10 percent of the 86 SPO impoundments sampled in 1990 and 1992; averages of chl-a, TSS, and years-to-fill also much better than overall averages for the 86 SPOs; (3) lake does not have problem with fishkills. Lake does not have a swimming beach, and Bachmann et al. report swimming use as zero; thus, use not assessed.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=FS) developed for the 1994 report.

For the 1998 report, the assessments of support of the Class B(LW) aquatic life uses developed for the 1994 and 1996 reports (=FST) was reviewed and approved by the DNR Fisheries Bureau. Due to lack of a swimming beach and swimming uses at this lake, the Class A (primary contact recreation) uses remain "not assessed."

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remain "not assessed." The Class B(LW) aquatic life uses remain assessed as "fully supported." Fish consumption uses remain "not assessed." EXPLANATION: The Class A (primary contact recreation) uses remain "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The previous (1998, see above) assessment of support of the Class B(LW) uses ("fully supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: SAC CO

Black Hawk Lake

Sac County, S35,T87N,R36W, at Lake View.

LAKE SIZE: 925 Acres

Waterbody ID No.: IA 04-RAC-00475-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys by the DNR Fisheries Bureau and (2) results of DNR/Parks beach monitoring in 1999. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both fishable and swimmable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring show that average levels of secchi depth, chl-a, total-P, and TSS are either approximately equal to or worse than overall averages for the 23 SPO natural lakes sampled in 1990 and 1992; all parameters are within +/- 1 SD of the overall averages. Lake has moderately high sedimentation rate for a natural SPOL and has a rel. short life expectancy (213 years); thus, lake is threatened by sediment from agricultural runoff. All contaminants analyzed for in samples of carp collected for the 1992 RAFT were < 1/2 the FDA action levels. According to Bachmann et al., the lake supports an average amount of swimming and fishing for a natural SPOL in Iowa. FS also threatened by plank. algae, org. enrich, and turbidity rel to nat. shallowness.

For 1996 report, used assessments of support of the Class A primary contact recreation uses and the Class B(LW) aquatic life uses developed for the 1994 report. In addition, used the results of analysis of 38 samples each collected from near the lake inlet and near the outlet in 1994 and 1995. The only violations of WQ criteria were two violations of the Class B(LW) criterion for dissolved oxygen near the inlet. This is not believed to suggest impaired water quality in the lake. A report by Miller and Herrig (1996) states that lake restoration measures, including dredging, as well as installation of agricultural best management practices in the lake watershed, and installation of lake aeration, have improved the water quality and recreational potential for the lake.

For the 1998 report, used the assess support of the Class A primary contact recreation uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1996 report. Support of fish consumption uses remains FS based on results of the 1992 fish tissue (RAFT) sampling. These assessments of use support, as well as the water quality trend for the lake ("improving") were reviewed in 1998 by the DNR Fisheries Bureau. Data for fecal coliform bacteria collected at two locations in the lake from 1993 to 1995 suggest relatively low levels and full support of Class A primary contact recreation uses. In the 15 samples collected during summers of 1993, 94, and 95 at two locations, only two samples at each location exceeded the Class A WQ criterion of 200 organisms per 100 ml. Based on Section 305(b) assessment procedures, both locations suggest full support of Class A uses (i.e., geometric means (32 & 21) are less than 200 orgs/100 ml and the percentages of samples > 400 orgs/100 ml (6% and 7%) are less than 10%). According to the March/April 1998 Iowa Conservationist, this lake supports good populations of walleye, bullheads, yellow bass, and channel catfish.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "fully supporting." The Class B(LW) aquatic life uses remained assessed as fully supporting / threatened"; fish consumption uses were considered "not assessed." EXPLANATION: Levels of indicator bacteria at Black Hawk Lake beach were monitored approximately twice per week during summer 1999 by DNR Parks, Recreation and Preserves Division as part of a beach monitoring program at 11 state-owned lakes. Results of the 34 samples collected at this beach showed that levels of indicator bacteria (fecal coliforms) were generally low, with the overall geometric mean (17 orgs/100 ml) well below the state WQ criterion of 200 orgs/100 ml. The maximum level of fecal coliforms in the 34 samples was 350 orgs/100 ml on June 14, 1999; thus, no samples exceeded the EPA-recommended single sample maximum density for fecal coliform bacteria of 400 orgs/100ml. None of the sixteen 30-day periods during summer 1999 had geometric means (N from 6 to 10) greater than the state WQ standard of 200 orgs/100ml.; the maximum 30-day geometric mean was 28 orgs/100ml. The Class B(LW) aquatic life uses remain assessed as "fully supporting / threatened" based on review and approval of the previous (1998) assessments by the DNR Fisheries Bureau in 2000. Fish consumption uses were previously assessed as fully supported (=FS) based on results of EPA/DNR fish tissue (RAFT) monitoring in 1992 that showed levels of all contaminants < 1/2 of respective FDA action levels. Results of this monitoring are now considered too old (greater than five years) to assess the current levels of contaminants in fish. Thus, the assessment of fish consumption uses was changed from "fully supporting" to "not assessed."

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Lakes, Wetlands, and Flood Control Reservoirs: SAC CO

Black Hawk Wildlife Area

Sac County, S9,T86N,R36W, 2 mi S of Lake View.

LAKE SIZE: 50 Acres

Waterbody ID No.: IA-WETLAND-50

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial

Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate siltation and extreme water level fluctuations associated with a large contributing watershed area, in addition to a serious exotic macrophyte (purple loosestrife) infestation, are impairing wetland uses. Biologist recommended that the support of the aquatic life uses of this wetland be assessed as PS.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Burrows Wetland

Sac County, S29,T89N,R36W, 3 mi NE of Early.

LAKE SIZE: 30 Acres

Waterbody ID No.: IA-WETLAND-51

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened

Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau. Unable to determine major basin; wetland is located near divide Des Moines and Western Iowa river basins.

Not assessed for the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland is impacted by siltation from agricultural nonpoint sources. Biologist recommended that the aquatic life uses of this wetland be assessed as FST.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: SAC CO

Kiowa Marsh

Sac County, S1,T88N,R37W, 2 mi E of Early

LAKE SIZE: 180 Acres

Waterbody ID No.: IA-WETLAND-52

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland is impacted by siltation from agricultural nonpoint sources. Biologist recommended that the aquatic life uses of this wetland be assessed as FST.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Tomahawk Marsh

Sac County, S9,T87N,R36W, 3 mi N of Lake View.

LAKE SIZE: 45 Acres

Waterbody ID No.: IA-WETLAND-53

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

BASIS FOR ASSESSMENT AND COMMENTS:

Waterbody not designated for beneficial uses in the Iowa Water Quality Standards as of June 1996. This publicly-owned waterbody was added to the list of Iowa wetlands in 1994 at the suggestion of the DNR Wildlife Bureau.

Not assessed for the 1994 or 1996 reports.

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland is impacted by siltation from agricultural nonpoint sources. Biologist recommended that the aquatic life uses of this wetland be assessed as FST.

For the 2000 report: SUMMARY: Continued to assess support of the aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the aquatic life uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: SCOTT CO

Lake of the Hills

Scott County, S25,T78N,R2E, 1/4 mi W of Davenport.

LAKE SIZE: 56 Acres

Waterbody ID No.: IA 01-NEM-00160-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys by DNR Fisheries and (2) results of fish tissue (RAFT) monitoring in 1994. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Fishable uses were assessed as FST.

For the 1994 report: Fishable uses were also assessed as FST for the following reasons: (1) BPJ of DNR staff; (2) results of monitoring show that average levels of total-P, chl-a, and TSS are better than overall averages for the 86 SPO impoundments sampled in 1990 and 1992; average level of secchi depth was worse than overall average and was barely within 1 SD from the overall average; (3) lake does not have problems with fishkills; (4) lake supports relatively high levels of swimming and fishing for SPO impoundments in Iowa; (5) lake has a relatively low sedimentation rate but has a rel. short life expectancy (98 years) for a SPO impoundment; thus, lake is threatened by sediment from NPSP.

For 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=FST). In addition, used results of fish contaminant monitoring conducted for the 1994 Regional Ambient Fish Tissue (RAFT) monitoring program to assess support of fish consumption uses as FS due to all contaminants being less than 1/2 of FDA action levels in the composite sample of largemouth bass filets analyzed (see report of the 1994 RAFT program in Iowa (DNR 1996)).

For the 1998 report, continued to use the assessments of support the Class B(LW) aquatic life uses (=FST) and the fish consumption uses (=FS) developed for the 1994 and 1996 reports. These assessments were reviewed the by DNR Fisheries Bureau in 1998.

For the 2000 report: SUMMARY: Continue to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened" (minor impacts). Fish consumption uses remained assessed as fully supported. EXPLANATION: The Class B(LW) uses remained assessed as "fully supported / threatened" based on the assessments developed for previous reports (see above). This assessment was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses at this lake remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1994 (see assessment for the 1998 report above). This lake is scheduled to be sampled as part of the ISU/DNR lake water quality monitoring project.

Princeton State Wildlife Area

Scott County, S25,T80N,R5E, north of Princeton, IA.

LAKE SIZE: 350 Acres

Waterbody ID No.: IA 01-WPS-0005-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Wildlife Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

BASIS FOR ASSESSMENT AND COMMENTS:

Not assessed for either the 1994, 1996, or 1998 reports.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses were assessed as "partially supported." EXPLANATION: Based on the recommendation from the DNR Wildlife Bureau, the support of the Class B(LW) aquatic life uses of this wetland was assessed as "partially supported." The cause of impairment is believed to be siltation related to annual flooding by the Mississippi River. According to the DNR Wildlife Bureau, this wetland has recently been protected from annual flood deposits by construction of a new boundary dike.

Lakes, Wetlands, and Flood Control Reservoirs: SHELBY CO

Manteno Park Pond

Shelby County, S2,T81N,R40W, 8 mi NW of Defiance.

LAKE SIZE: 14 Acres

Waterbody ID No.: IA 06-BOY-00263-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Segment not assessed for the 2000 305(b) cycle.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Fishable uses were assessed as NS, and swimmable uses were assessed as PS.

For the 1994 report: Fishable uses were assessed as PS, and swimmable uses were not assessed for the following reasons: (1) BPJ of DNR staff; (2) average levels of secchi depth and chl-a are slightly worse than the overall averages for the 86 SPO impoundments sampled in 1990 and 1992; average levels of total-P and TSS are approx equal to, or better than, the overall averages; (3) lake has only minor problems with fishkills; (4) according to Bachmann et al., lake supports rel. low amount of fishing and is not used for swimming (lake does not have a swimming beach); (5) lake has an extremely high sedimentation rate and short life expectancy (15 years). Thus, although lake has approxiately average WQ, high sed. rate & low level of fishing use (in lowest 10% of SPO impoundments) suggest that the aquatic life uses are only partially supported.

For the 1996 report, used assessment of support of the Class B (LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses were "not assessed" due to lack of swimming uses at this lake, and the Class B(LW) aquatic life uses were assessed as PS due to sediment and nutrients delivered to the lake in agricultural nonpoint sources. At the recommendation of the DNR Fisheries Bureau, this lake was added to the 1998 list of Section 303(d) waters.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses remained "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: SHELBY CO

Prairie Rose Lake

Shelby County, S36,T79N,R38W, 6 mi SE of Harlan.

LAKE SIZE: 219 Acres

Waterbody ID No.: IA 05-NSH-01440-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both fishable and swimmable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries, (2) results of monitoring show that average levels of secchi depth, total-P, and TSS are approximately equal to, or better than, overall averages for the 86 SPO impoundments sampled in 1990 and 1992; the average level of chl-a, however was worse than the overall average + 1 SD; (3) the sedimentation rate is rel. low (1.5 cm/yr) and life expectancy is rel. long (130 years) compared to other SPO impoundments; (4) lake does not have problems with fishkills; (5) the lake supports a typical amount of fishing but a rel. low amount of swimming. Summary report for RCWP notes that implement of BMPs in WS has improved WQ, but monitoring data cannot be used to document the improvements (Gale et al. 1992).

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST), the Class B(LW) aquatic life uses (=FST), and the fish consumption uses (=FS) developed for the 1994 report.

For the 1998 report, the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 and 1996 reports (=FST) was reviewed and approved by the DNR Fisheries Bureau. The fish consumption uses remain assessed as FS based on results of the 1992 RAFT fish tissue sampling. Continue to assess support of the Class A (primary contact recreation) uses as FST. No information available for developing an assessment of support of the Class C (drinking water) uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." The Class C (drinking water) uses and the fish consumption uses were "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. The Class C (drinking water) uses remained "not assessed" due to lack of information upon which to base an assessment. The level of support of the fish consumption uses was changed from "fully supported" to "not assessed" due to the lack of recent fish contaminant monitoring at this lake. Fish tissue monitoring was last conducted at this lake in 1992 as part of the EPA/DNR Regional Ambient Fish Tissue (RAFT) Monitoring program. The results from this monitoring are now considered too old (greater than five years) for characterizing current water quality conditions.

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Lakes, Wetlands, and Flood Control Reservoirs: **STORY CO**

Hendrickson Marsh

Story County, S1,T83N,R21W, 3.5 mi NE of Collins.

LAKE SIZE: 240 Acres

Waterbody ID No.: IA 02-IOW-02495-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS with high levels of siltation from agricultural nonpoint source runoff threatening continued support of this use.

For the 1996 report, used the assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report. This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Hickory Grove Lake

Story County, S24,T83N,R22W, 2.5 mi SW of Colo.

LAKE SIZE: 88 Acres

Waterbody ID No.: IA 03-SSK-00530-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened

Fish Consumption -- Not assessed Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both fishable and swimmable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring show that average levels of chl-a and TSS are approx equal to overall averages for the 86 SPO impoundments sampled in 1990 and 1992; average levels of total-P and secchi depth, however, were worse than the overall averages with the level of total-P worse than the overall average + 1 SD; (3) lake has a sedimentation rate (3.4 cm/yr) and life expectancy (160 years) typical for an SPO impoundment in Iowa; (4) lake supports rel high amounts of swimming and fishing; lake does not have problems with fishkills. Lake appears to be threatened by high levels of nutrients in NPS runoff and by turbidity that may interfere with swimmable uses. Although noting the general good WQ and high rec. use, DSC (1991) notes that algal blooms cause occas probs.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: TAMA CO

Casey Lake (aka Hickory Hills) Tama County, S13,T86N,R13W, 6 mi N of Dysart.

LAKE SIZE: 54 Acres

Waterbody ID No.: IA 02-CED-03060-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based (1) results from Univ. of Northern Iowa lakes study in 1999, (2) surveys of DNR Fisheries Bureau, and (3) fish tissue (RAFT) monitoring in 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Fully

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report.

For the 1994 report, both fishable and swimmable uses were assessed as FST for the following reasons: (1) results of monitoring show that average levels of secchi depth, total-P, chl-a, and TSS are approx equal to, or better than, overall averages for the 86 SPO impoundments sampled in 1990 and 1992; lake has a relatively low sedimentation rate (1.7 cm/yr) and rel. long life expectancy (181 years) for an SPO impoundment in Iowa; (3) lake has only minor problems with fishkills; (4) lake supports relatively high amounts of fishing and swimming for a rel. small (54 acre) impoundment. Lake appears to have only minor threats to uses from sediment and nutrients delivered to the lake in agricultural NPSP. Although DSC (1991) describes several problems w/ fishery (e.g., pops out of balance, rooted aquatics, phytoplankton, and summerkills, DNR fishing forecast notes good fishing for BLG, CCAT, CRAPS, & LMB.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "fully supported." The Class B(LW) aquatic life uses remain assessed as "fully supporting / threatened." Fish consumption uses are assessed as "fully supported." EXPLANATION: The Class A uses were assessed as "fully supported" based on results of monitoring conducted in 1999 as part of the University of Northern Iowa Summer Lakes Study (report available). Ninety samples from selected sites on Casey Lake were analyzed for levels of indicator bacteria (fecal coliforms) during a six-week period. Results of this monitoring show that weekly levels were generally below the Iowa water quality criterion of 200 orgs/100 ml. Based on this information, the Class A uses were assessed as "fully supported." The Class B(LW) uses remain assessed as "fully supported / threatened" based (1) on results of the University of Northern Iowa Summer Lakes Study that shows levels of water quality (as measured by dissolved oxygen, phytoplankton community, and biomass production) that can fully support the lake's aquatic life and (2) on the review and approval of the previous assessment of the Class B(LW) aquatic life uses ("fully supported / threatened") by the DNR Fisheries Bureau in 2000. A fish kill occurred at this lake during the biennial period on June 3, 1999. The kill was attributed to a fish disease (Columnaris) of natural origin. An estimated 300 fish were killed. (A fish kill also occurred at this lake on May 29, 1991, with an estimated 450 fish killed; no cause or source for this kill was identified.) According to DNR's assessment methodology for Section 305(b) reporting, this type of kill (natural) does not suggest either an impairment or a threat to the full support of the aquatic life uses. Results of EPA/DNR fish tissue monitoring (RAFT) in 1999 showed very low levels of very few contaminants in the composite samples of filets from channel catfish and largemouth bass. Of the 23 contaminants analyzed for, only one was found above analytical levels of detection in the sample of channel catfish (selenium), and only two were found in the sample of largemouth bass (selenium and mercury). Thus, because levels of all contaminants were less than 1/2 of the respective FDA action levels and DNR levels of concern, the fish consumption uses were assessed as "fully supported."

Otter Creek Lake

Tama County, S31, T84N, R14W, 5 mi NE of Toledo.

LAKE SIZE: 74 Acres

Waterbody ID No.: IA 02-IOW-02095-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both fishable and swimmable uses were assessed as FST for the following reasons: (1) results of monitoring show that average levels of total-P and TSS are better than overall averages for the 86 SPO impoundments sampled in 1990 and 1992; levels of secchi depth and chl-a are slightly worse than the overall averages but are well within +/- 1 SD; (2) the lake does not have problems with fishkills; (3) lake has a relatively low sedimentat rate (1.5 cm/yr) and a rel. long life expectancy (199 years) for an SPO impoundment in Iowa; (4) lake supports the amount of fishing typical for SPO impoundments and supports a relatively low amount of swimming. Lake appears to have only minor threats to support of uses from sediment and nutrients from agricultural NPSP. DSC (1991) reports that lake WQ and rec use remain high w/ no impairments due to NPSP; sediment dikes imp.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: TAMA CO

Otter Creek Marsh

Tama County, S3,T82N,R14W, 6 mi ESE of Tama.

LAKE SIZE: 1642 Acres

Waterbody ID No.: IA 02-IOW-02015-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Wildlife Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts from siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau. Comments from the DNR Wildlife Biologist indicate that siltation is of great concern and that valuable wetlands are lost after each flood year.

For the 2000 report: SUMMARY: The Class B(LW) aquatic life uses remained assessed as "partially supported." EXPLANATION: The Class B(LW) aquatic life uses remain assessed as "partially supported" based on review and approval of the previous (1998) assessment by the DNR Wildlife Bureau in 2000. The water quality trend for this wetland area was identified as "stable." According to the DNR Wildlife Bureau, siltation related to heavy rain and flood events remains a problem for this wetland area.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: TAMA CO

Union Grove Lake

Tama County, S33,T85N,R16W, 2.5 mi NW of Garwin.

LAKE SIZE: 105 Acres

Waterbody ID No.: IA 02-IOW-02195-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both fishable and swimmable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) result of monitoring in 1990 and 1992-93 show that average levels of total-P, TSS, and chl-a are approx. equal to, or better than, overall averages for the 86 SPO impoundments sampled in 1990 and 1992; average levels of secchi depth were slightly worse than the overall average; (3) lake does not have problems with fishkills; (4) lake supports a rel high level of fishing and rel. low level of swimming; (5) Bachmann et al. (1994) state that nuisance algal blooms are minimal. The relatively high sedimentation rate (3.7 cm/yr) and rel. short life expectancy (58 years) suggest that uses are threatened by sediment delivered to the lake in agricultural NPSP.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain assessed as FST.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: TAYLOR CO

East Lake (Lenox)

Taylor County, S6,T70N,R32W, at Lenox.

LAKE SIZE: 18 Acres

Waterbody ID No.: IA 05-PLA-00395-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of a 1995 UHL survey of water supply reservoirs. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Threatened		

BASIS FOR ASSESSMENT AND COMMENTS:

Lake was monitored near dam and near north inlet on Feb 3, 1993 for 7 ag herbicides in water and sediment. Relatively high levels of atrazine and cyanazine were detected in water near the dam and inlet: dam: (atrazine 1.2 ug/l; 8.7 ug/kg; cyanazine 1.1 ug/l; 7.0 ug/kg); inlet: (atrazine 1.3 ug/l; 5.7 ug/kg; cyanazine: 1.2 ug/l; 4.5 ug/kg). Although below the MCL, these relatively high levels during winter suggest the possibility of levels > MCL during summer. Detailed study at Corydon Res. (Kalkhoff 1993) showed that levels of atrazine were rel low during ice cover of winter but increased to well above the MCL during summer. Additional monitoring is needed to determine levels of herbicides in summer. Although levels of atrazine in water are < 1/2 MCL, consistently high levels in both samples suggest threat to DW use from ag pesticides; thus, assess as FST.

For 1996 report, used assessment of support of the Class C (drinking water) uses developed for the 1994 report (=FST), and used results of winter sampling for eight common agricultural herbicides at two locations (inlet and dam) in January 1995 to assess support of the Class C uses as again FST due to (1) levels of atrazine (0.32 and 0.34 ug/l, inlet/dam) that are lower than the average reportable concentration for the 19 water supply reservoirs sampled, (2) levels of cyanazine (0.61 to 0.68 ug/l, inlet and dam) that were approx 1/2 the average reportable concentration, and (3) no violations of the MCL for atrazine. Levels of atrazine and cyanazine appear to have decreased since the February 1993 sampling (Miller and Kennedy 1993).

For the 1998 report, continue to assess support of the Class C (drinking water) uses as FST based on assessments developed for the 1994 and 1996 reports. No information available for developing assessments of support of the Class A (primary contact recreation) uses or the Class B(LW) aquatic life uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain "not assessed." The Class C (drinking water) uses remain assessed as "fully supported / threatened." Fish consumption uses remain "not assessed." EXPLANATION: The Class A uses remain "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The Class B(LW) uses remain "not assessed" due to lack of information on the status of the aquatic communities of this lake. The assessment of support of the Class C (drinking water) uses remains based on the UHL survey of water supply reservoirs in 1995 (Miller and Kennedy 1995) (see assessment developed for the 1996 report above). Fish consumption used remain "not assessed" due to lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: TAYLOR CO

Lake of Three Fires

Taylor County, S12,T68N,R34W, 2 mi NNE of Bedford.

LAKE SIZE: 97 Acres

Waterbody ID No.: IA 05-PLA-00335-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Fishable uses were assessed as PS & swimmable as PS for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring show that average levels of total-P and TSS are equal to or slightly worse than the overall averages for the 86 SPO impoundments sampled in 1990 and 1992; (3) average levels of chl-a and secchi depth are much worse than the overall avg w/ the level of chl-a worse than the overall avg + 1 SD; (3) fishery of lake declining, and lake has problems with fishkills (DSC 1991); (4) lake supports moderately low amounts of fishing and swimming, but this may reflect low user population. The sedimentation rate (2.9 cm/yr) and life expectancy (94 years) are typical for SPO impoundments in Iowa. The high levels of chl-a and low secchi, however, suggest that the lake is impaired by high levels of nutrients in ag NPSP and by lack of depth to stratify.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class A (primary contact recreation) uses were assessed as PS due to nuisance levels of aquatic vegetation (algae), the Class B(LW) aquatic life uses were assessed as PS due to high levels of sediment and nutrients from agricultural nonpoint sources. At the recommendation of the DNR Fisheries Bureau, this lake was placed on the 1998 list of Section 303(d) waters.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Class C (drinking water) uses remained "not assessed." Fish consumption uses were assessed as "fully supported." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "partially supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Class C (drinking water) uses remained "not assessed" due to lack of information upon which to base an assessment. Fish consumption uses were assessed as "fully supported." EPA/DNR fish tissue (RAFT) monitoring conducted in 1998 showed that levels of contaminants in the composite sample of fillets from channel catfish and largemouth bass were less than 1/2 of the respective FDA action levels and DNR levels of concern for organochlorine contaminants and mercury. Thus, fish consumption uses were assessed as "fully supported."

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: TAYLOR CO

Wilson Park Lake

Taylor County, S28,T70N,R32W, 3 mi SSE of Lenox.

LAKE SIZE: 17 Acres

Waterbody ID No.: IA 05-PLA-00380-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Fishable uses were assessed as FST and swimmable uses were not assessed for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that average levels of secchi depth and chl-a are slightly worse than overall averages for the 86 SPO impoundments sampled in 1990 and 1992; average levels of total-P and TSS are better than overall averages; (3) lake does not have problems with fishkills; (4) lake has exceptionally low sedimentation rate (1.7 cm/yr) and long life expectancy (171 years) for a small impoundment (17 acres); (5) lake supports moderate amount of fishing. Although designated for swimmable uses, lake does not have a swimming beach, and Bachmann et al. report the level of swimming use as zero. Monitoring data, however, indicate no impairments to primary contact recreation.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, the Class B(LW) aquatic life uses remain assessed as FST. The Class A (primary contact recreation) uses remain assessed as "not assessed" due to lack of swimming use or a swimming beach at this lake.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was "not assessed" due to (1) the lack of information on levels of indicator bacteria at this lake and (2) the lack of swimming uses at this lake (see assessment developed for the 1994 report above). The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: TAYLOR CO

Windmill Lake

Taylor County, S36,T69N,R35W, 4 mi E of New Market.

LAKE SIZE: 24 Acres

Waterbody ID No.: IA 05-PLA-00430-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Fishable uses were assessed as FST & swimmable uses were not assessed for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring show that average levels of total-P and TSS are better than overall averages for the 86 SPO impoundments sampled in 1990 and 1992; average level of secchi depth is slightly worse than the overall average; the average level of chl-a, however, is worse than the overall average + 1 SD and is one of the highest chl-a averages for the SPO impoundments sampled in 1990 & 92; (3) lake does not have problems with fishkills; (4) lake has a moderately high sed rate (3.2 cm/yr) but a relatively long life expectancy (90 years) for a small impoundment; (5) lake supports moderate amount of fishing. Although designated for swimmable uses, lake does not have a swimming beach and Bachmann et al. report swimming use as zero; thus, swimming use not assessed.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=FST) developed for the 1994 report.

For the 1998 report, the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. The Class A (primary contact recreation) uses remain "not assessed" due to lack of a simming beach or swimming uses as this lake.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) remained "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was "not assessed" due to (1) the lack of information on levels of indicator bacteria at this lake and (2) the lack of swimming uses at this lake (see assessment developed for the 1994 report above). The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: UNION CO

Green Valley Lake

Union County, S26,T73N,R31W, 2.5 mi NW of Creston.

LAKE SIZE: 393 Acres

Waterbody ID No.: IA 05-PLA-00295-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "fully supported / threatened" (FST).

For the 1994 report: Both fishable and swimmable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries and other staff; (2) results of monitoring show that average levels of secchi depth, total-P, chl-a, and TSS are approx. equal to overall averages for the 86 SPO impoundments sampled in 1990 and 1992; (3) lake supports relatively high levels of fishing and swimming; (4) lake does not have winterkill problems; (5) lake has very low sedimentation rate (0.9 cm/yr) and very long life expectancy (321 years) for an Iowa impoundment. Support of fishable/swimmable uses is threatened by excessive primary productivity that leads to summerkills in one of five years and by nuisance blooms of algae that may limit swimmable uses; both these problems may be related to lack of sufficient depth to allow the lake to thermally stratify in summer.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and Class B(LW) aquatic life uses (=FST) developed for the 1994 report. In addition, used info from a 1990-94 Phase III Cleans Lakes study (Hoyman and Conover 1995) to update the assessment of aquatic life uses. Report shows that implementation of agricultural BMPs in the lake watershed and construction of sedimentation dikes at lake inlets has reduced the amount of sediment and nutrients reaching the lake and has thus improved water quality. Report states that macrophyte biomass has increased and that WQ will likely continue to improve. The assessment of B(LW) uses as FST is appropriate. Also used results of fish contaminant monitoring conducted for the 1995 RAFT program to assess support of fish consumption uses as FS due to all levels of contaminants in composite samples of channel catfish and white crappie < 1/2 all FDA action levels.

For the 1998 report, use assessments of support of the Class A primary contact recreation uses (=FST), Class B(LW) aquatic life uses (=FST), fish consumption uses (=FS), and Class C drinking water uses (=NAS) developed for the 1994 and 1996 reports. The March/April 1998 Iowa Conservationist notes that Green Valley Lake provides good angling for bullheads, largemouth bass, channel catfish and crappie.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Class C (drinking water) uses were "not assessed." Fish consumption uses remained assessed as "fully supported." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Class C (drinking water) uses remain "not assessed" due to the lack of water quality information upon which to base an assessment. Fish consumption uses remain "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1995 (see assessment developed for the 1996 report above).

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: UNION CO

Talmadge Hill Marsh

Union County, S20,T72N,R28W, 2.5 mi W of Thayer.

LAKE SIZE: 4 Acres

Waterbody ID No.: IA 05-GRA-01420-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS with high levels of siltation from agricultural nonpoint source runoff threatening continued support of this use.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, continue to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=PS). This assessment was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Thayer Lake

Union County, S22,T72N,R28W, 1 mi SW of Thayer.

LAKE SIZE: 14 Acres

Waterbody ID No.: IA 05-GRA-01410-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on information from the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Lake was not assessed for the 1994, 1996, or 1998 reports due to dam failure in 1993.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) were "not assessed." The Class B(LW) aquatic life uses were assessed as "partially supported." The fish consumption uses were "not assessed." EXPLANATION: The Class A uses were considered "not assessed" due to the lack of information on levels of indicator bacteria at this lake. At the recommendation of the DNR Fisheries Bureau, the Class B(LW) aquatic life uses were assessed as "partially supported" due to impacts from siltation from the relatively large watershed. Fish consumption uses remained "not assessed" due to the lack of fish tissue monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: UNION CO

Twelve Mile Creek Lake

Union County, S12,T72N,R30W, approx 4 mi E of Creston.

LAKE SIZE: 660 Acres

Waterbody ID No.: IA 05-GRA-01320-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Fully		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "partially supported" (PS).

For the 1994 report: Fishable uses were assessed as "fully supported / threatened" (FST), drinking water uses were assessed as "fully supported" (FS), and swimmable uses were "not assessed" for the following reasons: (1) BPJ of DNR Fisheries suggest that desig. uses are FST; (2) results of monitoring show that average levels of secchi depth, chl-a, TSS, and total-P are all much better than overall averages for the 86 SPO impoundments sampled in 1990 and 1992 with average levels of TSS and total-P better than the overall average +/- 1 SD; (3) lake does not have problem with fishkills; (4) lake supports one of the highest levels of fishing of any SPO impoundment in Iowa; (5) lake has one of the lowest sedimentation rates (1.1 cm/yr) and longest life expectancies (404 years) of any SPO impoundment in Iowa. Although lake is desig. for swimmable use, lake does not have a beach & swim use reported as 0 by Bachmann et al. A winter study of pesticides in Iowa water supply reservoirs (Miller and Kennedy 1993) showed that few pesticides at very low levels occurred in this lake.

For 1996 report, used assessments developed for the 1994 report for Class A (primary contact) uses (=NAS) and Class B(LW) aquatic life use (=FST). Used assessment of Class C (drinking water) uses developed for the 1994 report (=FS) in combination with the results from sampling for eight common herbicides in January 1995 as part of a winter survey of 19 Iowa water supply reservoirs (Miller and Kennedy 1995) to assess support of the Class C uses as FS due to (1) levels of atrazine (0.44 and 0.49 ug/l inlet and dam) were approx one-half the average reportable level (0.84 ug/l) for all 19 reservoirs sampled, (2) levels of cyanazine (0.16 and 0.18 ug/l) were far below the average reportable concentration (1.04 ug/l), and (3) no violations for the atrazine MCL.

For the 1998 report, used assessments of support developed for the 1994 and 1996 reports for the Class B(LW) aquatic life uses (=FST), and Class C drinking water uses (=FST). Due to lack of information, continue to not assess support of the Class A primary contact recreation uses. Based on results of the sampling for the 1996 Regional Ambient Fish Tissue (RAFT) monitoring program, assessed support of fish consumption uses as fully supporting: levels of all contaminants in the composite samples of fillets of crappie and channel catfish were below 1/2 of the respective FDA action levels. In the March/April 1998 Iowa Conservationist, Twelvemile Lake was identified as one of the best fishing lakes in southwest Iowa, with excellent populations of bluegill, largemouth bass, walleye/saugeye, and channel catfish.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) remained "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." The Class C (drinking water) uses remained "fully supported." Fish consumption uses remained "fully supported." EXPLANATION: The level of support of the Class A (primary contact recreation) remained "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Class C (drinking water) uses remained "fully supported" based on results from a 1995 study of Iowa water supply reservoirs (see assessment developed for the 1996 report above). Fish consumption uses remain "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1996 (see assessment developed for the 1998 report above).

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: VAN BUREN CO

Indian Lake

Van Buren County, S2,T67N,R8W, 1 mi SW of Farmington.

LAKE SIZE: 52 Acres

Waterbody ID No.: IA 04-LDM-00150-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both fishable and swimmable uses were assessed as PS for the following reasons: (1) BPJ of DNR staff; (2) results of monitoring show that average levels of TSS and secchi depth are approx equal to, or better than, overall averages for the 86 SPO impoundments sampled in 1990 and 1992; average levels of chl-a and total-P, however, are worse than the overall averages but are within +/- 1 SD; (3) lake either winterkills or summerkills in one of every 10 years; (4) Bachmann et al. (1994) report that "aquatic plant problems and nuisance algal blooms are common" at the lake. Lake has very low sedimentation rate (1.1 cm/yr) and rel long life expectancy (139 years) for a small (59 acre) impoundment; in addition, WQ is average to below average, but well within the range expected for SPO impoundments in Iowa. Assessment based on fishkill frequency and statements regarding nuisance plants.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, continued to use the assessment of support of the Class A primary contact recreation and Class B(LW) aquatic life uses developed for the 1994 report (both=PS). These assessments were reviewed by the DNR Fisheries Bureau. At the recommendation of the DNR Fisheries Bureau, this lake was placed on the list of Section 303(d) waters due to problems with organic enrichment and nuisance levels of planktonic algae.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "partially supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: VAN BUREN CO

Lacey Keosauqua Lake

Van Buren County, S2,T68N,R10W, 1 mi S of Keosauqua

LAKE SIZE: 22 Acres

Waterbody ID No.: IA 04-LDM-00160-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as PS.

For the 1994 report: Both fishable and swimmable uses were assessed as PS based on the recommendation of DNR Fisheries. Results of monitoring show that average levels of chl-a, total-P, and TSS are better than overall averages for the 86 SPO impoundments sampled in 1990 and 1992 but are within +/- 1 SD; average level of secchi depth approx equal to overall average; (3) lake does not have problem with fishkills (4) lake supports relatively high level of swimming but a rel. low amount of fishing. Lake has a moderately high sedimentation rate (4.1 cm/yr) but has a moderately long life expectancy for a small (22 acre) impoundment (87 years). DSC (1991) notes that the lake is relatively infertile for Iowa, the WS is almost entirely park and forest, there are no PS or NPS problems, and that the development of the fishery has been uneven.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses were assessed as PS due to high levels of turbidity from nonpoint runoff in the lake watershed. Nearly the entire watershed is in public ownership, and the turbidity is believed due to soil type. No information available for developing an assessment of support of the Class C (drinking water) uses.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." The Class C (drinking water) and fish consumption uses both remained "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "partially supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. The Class C (drinking water) uses remained "not assessed" due to a lack of water quality information upon which to base an assessment. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: VAN BUREN CO

Lake Sugema

Van Buren County, S15, T68, R10W, 3 mi. SW Keosauqua.

LAKE SIZE: 574 Acres

Waterbody ID No.: IA 04-LDM-0065-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Fully Aquatic Life Support -- Fully

Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Lake constructed in 1993; not assessed for previous Section 305(b) reports.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were considered "not assessed." The Class B(LW) aquatic life uses were assessed as "fully supported." Fish consumption uses were "not assessed." EXPLANATION: The Class A uses were considered "not assessed" due to lack of information on levels of indicator bacteria at this lake. Based on the recommendation of the DNR Fisheries Bureau, the Class B(LW) uses were assessed as "fully supported" with no known threats to full support of these uses. The water quality trend for this lake is "stable." The fish consumption use remain "not assessed" due to lack of fish tissue monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: WAPELLO CO

Ottumwa Lagoon

Wapello County, S25,T72N,R14W, at Ottumwa.

LAKE SIZE: 59 Acres

Waterbody ID No.: IA 04-LDM-00215-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys by the DNR Fisheries Bureau, (2) site visit by DNR/EPD staff on 5/23/95, and (3) fish tissue (RAFT) monitoring in 1998 and 1999. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	--	Not supporting	Aquatic Life Support	--	Partial
Fish Consumption	--	Threatened	Primary Contact (Recr)	--	Not supporting

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "partially supported" (=PS).

For the 1994 report: Fishable uses were assessed as PS and swimmable uses were not assessed for the following reasons: (1) BPJ of DNR staff; (2) results of monitoring show that average levels of total-P and chl-a are worse than overall averages +/- 1 SD for the 116 SPOLs sampled in 1990 and 1992; average level of secchi depth is worse than the overall average but is within 1 SD; average level of TSS approx equal to overall average; (3) lake winterkills in one out of ten years; (4) lake supports a moderate amount of fishing; (5) although designated for swimmable uses, Bachmann et al. report swimming use as zero; thus, swim. use not assessed. Lack of thermal stratification is likely the cause of the relatively poor water quality, although contributions of sediment and nutrients from agricultural and urban areas add to problems with water quality.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=PS) developed for the 1994 report. Two large CSOs which discharge into the Ottumwa Lagoon are a source of pathogens associated with sanitary waste. The Finley CSO was observed discharging into Ottumwa Lagoon on 5/22/95 following a 2-3" rain. A number of floating solids were observed coming from the CSO discharge. Class A swimming use was assessed as NS based on DNR staff judgement that waterbody would not be fit for swimming use as long as CSOs continue to discharge directly into Lagoon. Local recognition of the problem or posted advisories against swimming may explain why Bachmann et al (1994) report that swimming use is non existent.

For the 1998 report, continue to use the assessments of support of the Class A primary contact recreation uses (=NS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 and 1996 reports. These assessments were reviewed by the DNR Fisheries Bureau. Based on this review, the water quality impact due to "aquatic plants" (305(b) code 2200) was changed to "excessive algal growth" (305(b) code 2210).

For the 2000 report: SUMMARY: Continue to use the assessments of the Class A (primary contact recreation) uses ("not supporting") and the Class B(LW) aquatic life uses ("partially supporting) developed for the 1998 and previous reports. Fish consumption uses were assessed as "fully supported / threatened." EXPLANATION: The assessment of the Class A primary contact uses remains based on observations of combined sewer overflows discharging to the Ottumwa Lagoon by DNR staff in June 1995 (see above assessment for the 1996 report). Due to recent expansion of the DNR WQ monitoring network, routine water quality monitoring by ISU Limnology began at Ottumwa Lagoon summer 2000. Data from this monitoring will enable development of an updated assessment for the Class A uses and an assessment of the Class B(WW) aquatic life uses for the 2002 report. Based on results of recent EPA/DNR fish tissue (RAFT) monitoring, fish consumption uses were assessed as "not supporting." RAFT monitoring in 1998 showed that levels of all contaminants in the sample of largemouth bass fillets were well below 1/2 of respective FDA action levels and DNR levels of concern, but that the level of technical chlordane in the sample of common carp fillets (0.39 ppm) was greater than the FDA action level of 0.30 ppm. Follow-up (RAFT) monitoring was conducted in 1999. Levels of technical chlordane in samples of common carp fillets (0.24) were less than the FDA action level, while levels in the sample of channel catfish fillets (0.32 ppm) slightly exceeded the FDA action level of 0.30 ppm. Based on DNR's 305(b) assessment methodology, the occurrence of levels above 1/2 the FDA action level for chlordane in the absence of a fish consumption advisory suggests that fish consumption uses should be assessed as "fully supported / threatened." Samples of carp and channel catfish were collected from this lake for the 2000 RAFT program. If chlordane levels in the sample of channel catfish again exceed the FDA action level, a fish consumption advisory will be issued for this lake in summer 2001.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: WARREN CO

Lake Ahquabi

Warren County, S14,T75N,R24W, 4 mi SSW of Indianola.

LAKE SIZE: 108 Acres

Waterbody ID No.: IA 04-LDM-02615-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "partially supported" (PS).

For the 1994 report: Both fishable and swimmable uses were assessed as PS for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring in 1990 show that average levels of secchi depth, chl-a, total-P, and TSS were worse than overall averages for the 86 SPO impoundments sampled in 1990 and 1992; the level of TSS was worse than the overall average + 1 SD and was one of the highest TSS averages for any of the 116 SPOLs sampled. Bachmann (1991) reported that problems w/ transparency were related more to suspended sediments than to chlorophyll; (3) Bachmann (1991) reported a decrease in lake volume of 221,000 m3 from 1973 and 1990 due to sedimentation and that the rate of sedimentation for Ahquabi was relatively high. Bachmann et al. (1994) report relatively high level of use for swimming and rel low use for fishing.

For the 1996 report: As part of a Phase II Clean Lakes restoration project, the lake was drained beginning in 1993. Thus, beneficial uses were not assessed.

For the 1998 report: Lake was not assessed.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." The Class B(LW) aquatic life uses were assessed as "fully supported." Class C (drinking water) and fish consumption uses were "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was "not assessed" due to the lack of information on levels of indicator bacteria at this lake. The assessment of support of the Class B(LW) uses ("fully supported") was based a recommendation of the DNR Fisheries Bureau in 2000 and on results of water quality monitoring that followed the lake restoration project. This monitoring showed significant improvements in water quality and fish populations (see Bonneau 1999). This post-project monitoring is to continue through 2002. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

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Lakes, Wetlands, and Flood Control Reservoirs: WASHINGTON

Lake Darling

Washington County, S21,T74N,R9W, 3 mi W of Brighton.

LAKE SIZE: 299 Acres

Waterbody ID No.: IA 03-SKU-01450-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on (1) surveys by IDNR Fisheries Bureau and (2) results of DNR Parks beach monitoring in 1999. See attached document for details. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Fully
Drinking Water Supply	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "partially supported" (PS).

For the 1994 report: Both fishable and swimmable uses were assessed as PS for the following reasons: (1) BPJ of DNR Fisheries; (2) average levels of secchi depth, total-P, and TSS were worse than overall averages for the 86 SPO impoundments sampled in 1990 and 1992; averages of total-P and TSS were worse than the overall average + 1 SD and were some of the highest averages for the 116 SPOs sampled; these data suggest a WQ impairment due to ag. NPSP; (3) data in Bachmann et al. (1994) show that the lake supports relatively low amounts of fishing and swimming; (4) lake does not have problems with fishkills; (5) lake has a typical sedimentat. rate (2.2 cm/yr) and life expectancy (119 years) for a SPO impoundment in Iowa. According to DNR/Iowa Conservationist fishing forecast for 1994, lake is good for ccat, crappie, LMB, and carp, and bullhead. Levels of fish contams < 1/2 FDA action levels.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS), the Class B(LW) aquatic life uses (=PS), and the fish consumption uses (=FS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, this lake continues to have problems with high levels of turbidity that limit Class A (primary contact recreation) uses and problems from siltation and nutrients that impair the Class B(LW) aquatic life uses. At the recommendation of the DNR Fisheries Bureau, this lake was placed on the 1998 list of Section 303(d) waters.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were assessed as "fully supporting." The Class B(LW) aquatic life uses remained assessed as "partially supporting"; fish consumption uses were considered "not assessed." EXPLANATION: The assessment of support of the Class A uses was changed from "partially supported" to "fully supported." Levels of indicator bacteria at Lake Darling beach were monitored approximately twice per week during summer 1999 by DNR Parks, Recreation and Preserves Division as part of a beach monitoring program at 11 state-owned lakes. Results of the 35 samples collected at this beach showed that levels of indicator bacteria (fecal coliforms) were relatively low, with the overall geometric mean (41 orgs/100 ml) below the state water quality criterion of 200 orgs/100 ml. The maximum level of fecal coliforms in the 35 samples was 5,200 orgs/100 ml on June 1, 1999. According to U.S. EPA guidelines for determining "full support" of primary contact uses (U.S. EPA 1997b, page 3-35), the geometric mean of fecal coliform bacteria levels should not exceed 200 orgs/100ml based on at least five samples in a 30-day period. In addition, not more than 10% of the total samples taken during any 30-day period should have a density that exceeds 400 orgs/100 ml. None of the sixteen 30-day periods during summer 1999 had geometric means (N = from 6 to 10 samples per period) greater than the state water quality criterion of 200 orgs/100ml.; the maximum 30-day geometric mean was 72 orgs/100ml. One sample (5,200 orgs/100 ml on June 1) exceeded the EPA-recommended single sample maximum density for fecal coliform bacteria of 400 orgs/100ml. One 30-day period contained this sample; the percentage of samples exceeding 400 orgs/100 ml for this period was 11%. Given that fewer than 10 samples were collected during one of these periods, DNR does not consider this minor variance (11% violation) for the EPA criterion for full support (not more than 10% violation) to suggest an impairment to the primary contact recreation uses. Thus, the Class A (primary contact recreation) uses were assessed as "fully supported." The Class B(LW) aquatic life uses remain assessed as "partially supporting" based on review and approval of the previous (1998) assessments by the DNR Fisheries Bureau in 2000. Fish consumption uses were considered "not assessed" due to the lack of recent fish tissue monitoring at this lake. The most recent fish tissue monitoring was conducted in 1993 as part of the EPA/DNR fish tissue (RAFT) monitoring program. These data are now considered too old (greater than five years) for characterizing current water quality conditions. Thus, the assessment of fish consumption uses was considered "not assessed."

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: WAYNE CO

Bob White Lake

Wayne County, S4,T68N,R22W, 1 mi W of Allerton.

LAKE SIZE: 89 Acres

Waterbody ID No.: IA 05-CHA-00690-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Not supporting
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "partially supported" (PS).

For the 1994 report: Both fishable and swimmable uses were assessed as "not supported" (NS) for the following reasons: (1) results of monitoring in 1990 show that average levels of secchi depth, total-P, and TSS were worse than overall averages for the 86 SPO impoundments sampled in 1990 and 1992 +/- 1 SD; average levels for all these parameters were in the worst 10% of SPO impoundments sampled; no other of the 116 SPOLs had these three parameters in the worst 10%; (2) levels of swimming and fishing reported in Bachmann et al. (1994) are relatively low but are not in the lowest 10%; (3) lake has a moderately high sedimentation rate (3.1 cm/yr) and rel. short life expectancy (50 years) for SPO impoundments in Iowa. Thus, despite the levels of swimming and fishing use reported, the data suggest that this lake has some of the poorest WQ of any SPOL in Iowa. All fish contaminants from the composite sample of channel catfish fillets sampled for the 1991 EPA/DNR fish tissue (RAFT) monitoring program were less than 1/2 of the respective FDA action levels. Thus, fish consumption uses were assessed as "fully supported."

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=NS), the Class B(LW) aquatic life uses (=NS), and the fish consumption uses (=FS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, continue to assess support of both the Class A (primary contact recreation) uses and Class B(LW) aquatic life uses as NS due to high levels of turbidity, and continue to assess support of the fish consumption uses as FS based on results of RAFT fish tissue monitoring in 1991. Due to the continuing problems with high levels of turbidity, as well as high levels of siltation and nutrients, this lake was placed on the 1998 list of Section 303(d) waters.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Fish consumption uses were "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "not supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("not supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. The level of support of the fish consumption uses was changed from "fully supported" to "not assessed" due to the lack of recent fish contaminant monitoring at this lake. The most recent fish contaminant monitoring was conducted as part of the 1991 EPA/DNR fish tissue (RAFT) monitoring program (see assessment developed for the 1994 report above). The results of this monitoring are now considered too old (greater than five years) for characterizing current water quality conditions.

Lakes, Wetlands, and Flood Control Reservoirs: WAYNE CO

Corydon Reservoir

Wayne County, S24,T69N,R22W, at Corydon.

LAKE SIZE: 50 Acres

Waterbody ID No.: IA 05-CHA-00620-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment is based on results of the 1995 UHL survey of Iowa water supply reservoirs (Miller and Kennedy 1995). See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Not assessed
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed
Drinking Water Supply	-- Not supporting		

BASIS FOR ASSESSMENT AND COMMENTS:

Lake was monitored from Sept 90 through Sept 91 as part of baseline WQ study (Kalkhoff 1993) conducted prior to implement. of BMPs in watershed; results in Tables 8 and 9 were used to assess support of uses. Both fishable and swimmable uses were assessed as PS for the 1992 report; for the 1994 report, DW uses were assessed as NS, fishable uses were assessed as PS, and swimmable uses were not assessed for the following reasons: (1) levels of atrazine exceeded MCL from June through Sept 1991 and the yearly average approx = 7 ug/l (=NS); (2) avg levels of secchi depth, total-P, and TSS during the May-Aug period were worse than overall averages for SPO impoundments sampled during 1990 and 92; averages for secchi depth and TSS were in the worst 10% of the SPO impoundments; (3) although designated for swim. uses, lake does not have a swimming beach; thus presume level of swimming use is zero. In Feb 93, atrazine, cyanazine, & metolachlor at low levels (Miller and Kennedy 1993).

For the 1996 report, continue to assess support of the Class C (drinking water) uses as NS due to high levels of atrazine reported by Kalkhoff (1993). Results from sampling in January 1995 as reported by Miller and Kennedy (1995) showed that Corydon Reservoir had the highest concentration of atrazine (2.6 and 2.4 ug/l; inlet and dam, respectively) of the 19 reservoirs sampled; levels of cyanazine (2.1 and 2.3 ug/l at inlet and dam) were also among the highest of the study. Levels of atrazine metabolites were also highest of the study. The assessment of support of the Class C uses as NS remains despite (1) the fact that Corydon Reservoir is not used as a source of drinking water (city of Corydon receives drinking water from the Rathbun Rural Water Association and (2) that the MCL for atrazine was not exceeded during the study. USGS monthly mon from 1990 thru Dec 94 shows spring/summer viols of atrazine MCL.

For the 1998 report, continued to use the assessments of support of the designated uses for this lake developed for the 1996 report: (1) Class C (drinking water) uses were assessed as NS due to average levels of atrazine that exceeded the MCL during the period 1990-1994, even though this lake is no longer used as a source of water for the public water supply, (2) Class B(LW) aquatic life uses were assessed as PS due to turbidity related to high levels of siltation and nutrients in the lake, and (3) the Class A (primary contact recreation) uses were not assessed due to lack of information (see 1994 assessment). Due to the historically high levels of atrazine, this lake was placed on the 1998 list of Section 303(d) waters at the recommendation of the DNR Water Quality Bureau.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remained "not assessed." The Class B(LW) aquatic life uses were changed from "partially supported" to "not assessed." The Class C (drinking water) uses remain assessed as "not supported." The fish consumption uses remained "not assessed." EXPLANATION: The Class A (primary contact recreation) uses were "not assessed" due to a lack of information on levels of indicator bacteria at this lake. The level of support of the Class B(LW) uses was changed from "partially supported" to "not assessed" due to a lack of recent information on the status of the aquatic communities of this lake. The previous assessment of support of the Class B(LW) aquatic life uses ("partially supported"; see above) was based on a 1992 "best professional judgement" review by the DNR Fisheries Bureau. This assessment has not been updated since 1992 and is now considered too old (greater than five years) for characterizing current water quality conditions. Thus, the assessment of the Class B(LW) aquatic life uses was changed to "not assessed." The Class C (drinking water) uses remained assessed as "not supported." This assessment is based primarily on results of the 1995 UHL winter survey of Iowa water supply reservoirs (Miller and Kennedy 1995) that showed Corydon Reservoir had the highest levels of atrazine of the 19 reservoirs sampled (see assessment for the 1996 report above). Fish consumption uses were "not assessed due to the lack of fish contaminant monitoring at this lake.

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Lakes, Wetlands, and Flood Control Reservoirs: WEBSTER CO

Badger Lake

Webster County, S19,T90N,R28W, 4.5 mi N of Fort Dodge.

LAKE SIZE: 45 Acres

Waterbody ID No.: IA 04-UDM-03395-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on surveys of the DNR Fisheries Bureau. See attached document for details.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report; both were assessed as PS for the 1994 report for the following reasons: (1) BPJ of DNR staff that report complaints from the local public regarding WQ problems and unpleasant odor at Badger Lake; (2) results of monitoring show that average levels of chl-a, total-P, and TSS are worse than overall averages for the 86 SPO impoundments sampled in 1990 and 1992, but all are within +/- 1 SD of the overall averages; average level of secchi depth is approx equal to the overall average; (3) estimate of swimming use in Bachmann et al. (1994) is in the lowest 10% of the 61 SPO impoundments with data for swimming use; this low number in a lake near a large population center with few other swimmable waters nearby suggests an impairment; (4) the lakes sedimentation rate (11.6 cm/yr) and life expectancy (17 years) are in the worst 10% of 86 the SPO impoundments.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, continued to assess support of the Class A primary contact recreation uses and the Class B(LW) aquatic life uses (both=PS) developed for the 1994 report. These assessments were reviewed by the DNR Fisheries Bureau. The DNR Fisheries biologist indicated that the water quality trend for this lake could be changed from "declining" to "improving." Due to these water quality problems, this lake was placed on the 1998 list of Section 303(d) waters at the recommendaton of the DNR Fisheries and Water Quality bureaus.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were considered "not assessed." The Class B(LW) aquatic life uses remained assessed as "partially supported." Fish consumption uses were "not assessed." EXPLANATION: The Class B(LW) aquatic life uses remain assessed as "partially supported" based on review and approval of the previous (1998) assessment by the DNR Fisheries Bureau in 2000. The water quality trend for this lake, however, was changed from "improving" to "stable." The fish consumption use remain "not assessed" due to lack of fish tissue monitoring at this lake.

Water Quality in Iowa During 1998 and 1999: Assessment Results

Lakes, Wetlands, and Flood Control Reservoirs: WINNEBAGO CO

Harmon Lake

Winnebago County, S21,T100N,R24W, 6 mi NNE of Thompson.

LAKE SIZE: 241 Acres

Waterbody ID No.: IA 02-WIN-00235-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with siltation believed to threaten continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report.

For the 1998 report, the assessments of support of the Class B(LW) aquatic life uses were reviewed and approved by the DNR Wildlife Bureau. Thus, the Class B(LW) uses remain assessed as FST.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Myre Slough

Winnebago County, S22,T98N,R25W, 6 mi W of Forest City.

LAKE SIZE: 215 Acres

Waterbody ID No.: IA 04-EDM-00995-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with siltatio from agricultural nonpoint sources believed to threaten the continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, comments of DNR Wildlife Biologist indicate that, in addition to siltation impacts, nutrients in runoff from confined livestock operation in watershed are also a threat to continued full attainment of B(LW) uses.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: WINNEBAGO CO

Rice Lake

Winnebago County, S13,T99N,R23W, at SE edge of Lake Mills.

LAKE SIZE: 702 Acres

Waterbody ID No.: IA 02-WIN-00210-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to high levels of nutrients delivered to the lake in agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report.

For the 1998 report, based on comments of DNR Wildlife Biologist, nutrients in runoff from confined livestock feeding operation are also contributing to degraded water quality and PS use support status.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: WINNESHIEK CO

Cardinal Marsh

Winneshiek County, S7,T98N,R10W, 4 mi NW of Ridgeway.

LAKE SIZE: 62 Acres

Waterbody ID No.: IA 01-TRK-02285-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts of siltation from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessment of support of the Class B(LW) aquatic life uses was reviewed and approved by the DNR Wildlife Bureau.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: WINNESHIEK CO

Lake Meyers

Winneshiek County, S34,T97N,R9W, 3 mi SW of Calmar.

LAKE SIZE: 37 Acres

Waterbody ID No.: IA 01-TRK-02245-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys by DNR Fisheries and (2) results of fish tissue (RAFT) monitoring in 1994. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report; fish uses were assess as PS and swim uses not assess for following reasons: (1) results of monitoring show that average levels of secchi depth, total-P, and TSS are equal to, or better than, overall averages for the 86 SPO impoundments sampled in 1990 and 1992; the average level of chl-a is worse than the overall average but is within 1 SD; (2) although lake is desig. for swimmable uses, the lake does not have a swimming beach and Bachmann et al. report swimming use as zero; (3) fishing use is rel. high for a small (37.1 acre) impoundment and this lake was noted for CCAT, crappie, and LMB fishing in the 1994 DNR fishing forecast in the Iowa Conservationist; (4) lake has a moderately high sedimentation rate (3.9 cm/yr) but a relatively long life expectancy (91 years) for a small impoundment. Primary impairment is organic enrich leading to summerkills in 1 of 7 yrs.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=NAS) and Class B(LW) aquatic life uses (=PS) developed for the 1994 report; no more recent information available for assessing these uses. Used results of fish contaminant monitoring conducted for the 1994 Regional Ambient Fish Tissue (RAFT) monitoring program to assess support of the fish consumption uses as FS due to all contaminants less than 1/2 of FDA action levels in the composite sample of largemouth bass fillets analyzed; no contaminants exceeded DNR levels of concern (see report of 1994 RAFT program in Iowa (DNR 1996)).

For the 1998 report, continued to use assessments of support of the Class A primary contact recreation uses (=NAS) developed for the 1994 and 1996 reports. Also continued to assess support of the Class B(LW) aquatic life uses as PS. The 1996 assessment was reviewed and approved by the DNR Fisheries Bureau. This lake was added to the 1998 list of Section 303(d) waters at the recommendation of the DNR Fisheries Bureau. Based on results of the 1994 FAFT fish tissue sampling (see above), fish consumption uses remain assessed as FS.

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses remained "not assessed." Continue to assess support of the Class B(LW) aquatic life uses as "partially supported." Fish consumption uses remained assessed as fully supported. EXPLANATION: The Class A uses were considered "not assessed" due to a lack of information on levels of indicator bacteria for this lake. The Class B(LW) uses remained assessed as "partially supported" based on the assessments developed for previous reports (see above). This assessment was reviewed and approved by the DNR Fisheries Bureau in 2000. In response to water quality problems at this lake, the Winneshiek County Soil and Water Conservation District conducted an assessment of the Lake Meyer watershed to identify priority areas for control of soil erosion. Several priority areas have been identified and landowners have been contacted. Additional funding sources are needed to implement the controls on soil erosion to improve the water quality in this lake. Fish consumption uses at this lake remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1994 (see assessment for the 1998 report above). This lake is scheduled to be sampled as part of the ISU/DNR lake water quality monitoring project.

Lakes, Wetlands, and Flood Control Reservoirs: **WOODBURY CO****Browns Lake**

Woodbury County, S32,T87N,R47W, 2 mi W of Salix.

LAKE SIZE: 219 Acres

Waterbody ID No.: IA 06-WEM-00485-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Threatened	Aquatic Life Support	-- Threatened
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "partially supported" (PS).

For the 1994 report: Both fishable and swimmable uses were assessed as FST for the following reasons: (1) BPJ of DNR Fisheries; (2) results of monitoring show that average levels of total-P, TSS, and chl-a are better than overall averages for the 116 SPOLs sampled in 1990 and 1992; the average level of secchi depth was worse than the overall average but was within 1 SD; (3) estimates of both fishing in swimming reported by Bachmann et al. are relatively high for Iowa SPOLs; (4) as expected, the oxbow lake has a rel. low sedimentation rate (0.5 cm/yr) and moderately long life expectancy (270 years); (5) Harlan et al. report that channel degradation of the Missouri River has caused water level problems for the lake; thus, lake receives cooling water from a power plant. Thus, lake is threatened by hydromodification of the Missouri R. and by natural lack of depth to allow therm. strat.

For 1996 report, used assessments of support of the Class A (primary contact) uses (=FST) and the Class B(LW) aquatic life uses (=FST) developed for the 1994 report. Used results of fish contaminant monitoring conducted for the 1995 DNR/EPA Regional Ambient Fish Tissue (RAFT) monitoring program to assess support of the fish consumption uses as "fully supported" (FS) due to levels of all contaminants less than 1/2 FDA action levels in the composite samples of channel catfish and largemouth bass filets analyzed.

For the 1998 report: Assessments of use support were reviewed by the DNR Fisheries Bureau. DNR Fisheries biologist that aquatic plants pose a problem on an intermittent basis.

For the 2000 report: SUMMARY: The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The level of support of the Class A (primary contact recreation) uses was changed from "fully supported / threatened" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain assessed as "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1995 (see assessment developed for the 1996 report above).

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Lakes, Wetlands, and Flood Control Reservoirs: **WOODBURY CO**

Little Sioux Park Lake

Woodbury County, S12,T89N,R42W, 2 mi SSW of Correctionville.

LAKE SIZE: 13 Acres

Waterbody ID No.: IA 06-LSR-00250-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Fully	Aquatic Life Support	-- Fully
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "fully supported" (FS).

For the 1994 report: Both fishable and swimmable uses were assessed as FS for the following reasons: (1) BPJ of DNR staff; (2) results of monitoring show that average levels of secchi depth, chl-a, total-P and TSS are much better than overall averages for the 86 SPO impoundments sampled in 1990 and 1992; average levels of secchi depth, chl-a, and total-P are in the best 10% of the SPO impoundments sampled; (3) the sedimentation rate (0.4 cm/yr) and life expectancy (790 years) are in the best 10% of the SPO impoundments sampled; (4) this very small SPO (12.8 acres) supports very high levels of both fishing and swimming (over 200 user days/yr/acre for each use). Thus, lake appears to fully support uses and does not appear to have threats to support of these uses.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=FS) and the Class B(LW) aquatic life uses (=FS) developed for the 1994 report.

For the 1998 report, the assessments of support developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain assessed as "fully supported."

For the 2000 report: **SUMMARY:** The Class A (primary contact recreation uses) were "not assessed." Continued to assess support of the Class B(LW) aquatic life uses as "fully supported." Other beneficial uses remain "not assessed." **EXPLANATION:** The level of support of the Class A (primary contact recreation) uses was changed from "fully supported" to "not assessed" due to the lack of information on levels of indicator bacteria at this lake. This change in assessment reflects a change in the DNR's Section 305(b) assessment methodology and does not reflect any known change in water quality. The previous (1998) assessment of support of the Class B(LW) uses ("fully supported") was reviewed and approved by the DNR Fisheries Bureau in 2000. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring at this lake.

Lakes, Wetlands, and Flood Control Reservoirs: **WOODBURY CO****Snyder Bend Lake**

Woodbury County, S17,T86N,R47W, 3 mi SW Salix.

LAKE SIZE: 375 Acres

Waterbody ID No.: IA 06-WEM-00475-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to habitat alteration (water level instability) related to hydrological modification (degradation) of the Missouri River channel.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS). According to the March/April 1997 Iowa Conservationist, this lake has recently been infested with Eurasian millfoil. An attempt at chemical eradication will be made in 1997.

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses (=PS) developed for the 1994 report. This assessment was reviewed and approved by the DNR Wildlife Bureau. The DNR Wildlife Biologist identified hydrological habitat modifications and siltation from nonpoint sources as the primary threats to water quality. Exotic/noxious aquatic plants were not identified as a water quality problem.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Winnebago Bend Lake

Woodbury County, S28,T86N,R47W, 5 mi W of Sloan.

LAKE SIZE: 555 Acres

Waterbody ID No.: IA 06-WEM-00470-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Not supporting	Aquatic Life Support	-- Not supporting
Fish Consumption	-- Not assessed	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as NS due to impacts of habitat alteration (water level instability) related to hydrological modification (degradation) of the Missouri River channel.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=NS).

For the 1998 report, continued to use the assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report (=NS). This assessment was reviewed and approved by the DNR Wildlife Bureau. The Wildlife Biologist recommended that siltation from nonpoint sources also be added as a primary threat to water quality.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "not supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("not supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: WORTH CO

Elk Creek Marsh

Worth County, S5,T99N,R22W, 3 mi. N of Joice.

LAKE SIZE: 1000 Acres

Waterbody ID No.: IA 02-SHL-00390-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to impacts from siltation primarily from agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=PS).

For the 1998 report, comments of DNR Wildlife Biologist indicate that, in addition to siltation impacts, nutrients in runoff from confined livestock feeding operation are contributing to degraded water quality and PS use status.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Silver Lake

Worth County, S14,T100N,R22W, 8 mi. N of Joice.

LAKE SIZE: 316 Acres

Waterbody ID No.: IA 02-SHL-00295-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Fisheries Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial
Fish Consumption -- Not assessed Primary Contact (Recr) -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1992 report: Both fishable and swimmable uses were assessed as "partially supported" (PS).

For the 1994 report: Both fishable and swimmable uses were assessed as PS for the following reasons: (1) BPJ of DNR Fisheries; (2) estimated level of use for swimming and fishing reported by Bachmann et al. are relatively low, with level of swimming use in the lowest 10% of the 22 natural SPOLs designated for swimmable uses; (3) lake has a winterkill frequency of 1 of 8 years. Results of monitoring suggest that WQ is relatively good: average levels of secchi depth, chl-a, total-P, and TSS are either approx equal to, or better than, overall averages for the 23 natural SPOLs sampled in 1990 and 1992. Primary impairment is the natural shallowness (max d= 6' mean d=5') that allows resuspension of sediment and nutrients that lead to problems with organic enrichment and problems with either rooted or planktonic aquatic vegetation.

For the 1996 report, used assessments of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Fisheries Bureau. Thus, both the Class A (primary contact recreation) uses and the Class B(LW) aquatic life uses remain assessed as PS due to problems with algal blooms and organic enrichment that are typical in Iowa's shallow, glacial lakes in north-central Iowa.

For the 2000 report: The Class A (primary contact recreation) uses were "not assessed." The Class B(LW) aquatic life uses remain assessed as "partially supported." Fish consumption uses remain "not assessed." EXPLANATION: The assessment of support of the Class A uses was changed from "partially supported" to "not assessed" due to lack of recent information on either levels of indicator bacteria or levels of chlorophyll (i.e., algal populations) for this lake. The Class B(LW) uses remain "partially supported" based on the review and approval of the previous (1998) assessment by the DNR Fisheries Bureau in 1998. Fish consumption uses remain "not assessed" due to the lack of fish contaminant monitoring in this lake.

Lakes, Wetlands, and Flood Control Reservoirs: **WORTH CO**

Silver Lake Marsh

Worth County, S10,T100N,R22W, 9 mi. N of Joice.

LAKE SIZE: 109 Acres

Waterbody ID No.: IA 02-SHL-00296-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Threatened Aquatic Life Support -- Threatened
Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with siltation from agricultural nonpoint sources believed to threaten continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report.

For the 1998 report, the assessment developed for the 1994 and 1996 reports were reviewed and approved by the DNR Wildlife Bureau. Thus, the Class B(LW) aquatic life uses of this wetland remain assessed as FST.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "fully supported / threatened." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("fully supported / threatened") was reviewed and approved by the DNR Wildlife Bureau in 2000.

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Lakes, Wetlands, and Flood Control Reservoirs: WRIGHT CO

Big Wall Lake

Wright County, S14,T90N,R24W, 8 mi WSW of Dows.

LAKE SIZE: 935 Acres

Waterbody ID No.: IA 02-IOW-00860-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with siltation from agricultural nonpoint sources believed to threaten continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, comments of DNR Wildlife Biologist indicate the wetland is impacted by a lack of water level fluctuations and an outlet structure to properly manipulate the water level. Use support status downgraded to PS from FST on basis of biologist's comments.

For the 2000 report: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." The previous (1998) assessment was reviewed and approved by the DNR Wildlife Bureau in 2000.

Elm Lake

Wright County, S21,T92N,R24W, 1 mi. S of Cornelia.

LAKE SIZE: 463 Acres

Waterbody ID No.: IA 02-IOW-00870-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.

SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support -- Partial Aquatic Life Support -- Partial

Fish Consumption -- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as FST, with siltation from agricultural nonpoint sources believed to threaten the continued support of these uses.

For the 1996 report, used assessment of support of the Class B(LW) uses developed for the 1994 report (=FST).

For the 1998 report, comments of DNR Wildlife Biologist indicate wetland uses are impaired by siltation and nutrients from agric. nonpoint sources. Additionally, there are tile water inputs to the wetland that mask the natural water level fluctuations. The use support status was downgraded to PS based on biologist's recommendation.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.

Lakes, Wetlands, and Flood Control Reservoirs: WRIGHT CO

Lake Cornelia

Wright County, S16,T92N,R24W, at Cornelia.

LAKE SIZE: 243 Acres

Waterbody ID No.: IA 04-UDM-02290-L

Waterbody Type: Freshwater Lake

Significant Publicly-owned Lake?: Yes

ASSESSMENT COMMENTS: Assessment is based on (1) surveys of the DNR Fisheries Bureau and (2) results of fish tissue (RAFT) monitoring in 1997. See attached document for details.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Fully	Primary Contact (Recr)	-- Not assessed

BASIS FOR ASSESSMENT AND COMMENTS:

Both fishable and swimmable uses were assessed as PS for the 1992 report; both were assessed as PS for the 1994 rep based upon the recommendation of DNR Fisheries. Monitoring shows that average levels of secchi depth, total-P, and TSS are approx equal to, or better than, overall averages for the 23 natural SPOLs sampled in 1990 and 1992; average level of chl-a, however, was worse than the overall average, but was within 1 SD of the overall average. Fishkill frequencies are described as "rare if ever," (3) estimates of use for fishing and swimming are typical for natural SPOLs; (4) DNR's 1994 fishing forecast in the Iowa Conservationst notes that L. Cornelia is good for walleye, yellow perch, and CCAT. Support of fish/swim uses is threatened by the large amount of shallow water in the southern two-thirds of the lake. The lack of thermal stratification allows resuspension of sed. & nutrients. Lake has low sed rate and long life expectancy (813 yrs).

For the 1996 report, used assessment of support of the Class A (primary contact) uses (=PS) and the Class B(LW) aquatic life uses (=PS) developed for the 1994 report.

For the 1998 report, continued to use assessments of support of the Class A primary contact recreation uses and the Class B(LW) aquatic life uses (both=PS) developed for the 1994 report. These assessments were reviewed and approved by the DNR Fisheries Bureau. Results of the 1997 DNR/U.S. EPA "RAFT" fish contaminant monitoring program showed that levels of the relatively few contaminants detected in the composite samples of filets from carp and yellow perch were well below 1/2 of the respective FDA action levels and DNR levels of concern. Thus, assess support of the fish consumption uses as "fully supporting."

For the 2000 report: SUMMARY: The Class A (primary contact recreation) uses were considered "not assessed." The Class B(LW) aquatic life uses remained assessed as "partially supported." Fish consumption uses remained "fully supported." EXPLANATION: The Class B(LW) aquatic life uses remain assessed as "partially supported" based on review and approval of the previous (1998) assessment by the DNR Fisheries Bureau in 2000. The water quality trend for this lake remains "stable." The fish consumption use remain "fully supported" based on results of EPA/DNR fish tissue (RAFT) monitoring in 1997 that showed low levels of all contaminants (see assessment for the 1998 report above).

Morse Lake

Wright County, S28,T93N,R24W, 3.5 mi W of Belmond.

LAKE SIZE: 108 Acres

Waterbody ID No.: IA 02-IOW-00890-L

Waterbody Type: Freshwater Wetlands

Significant Publicly-owned Lake?: No

ASSESSMENT COMMENTS: Assessment based on surveys by IDNR Wildlife Bureau.SUMMARY OF THE DEGREE TO WHICH THIS WATERBODY SUPPORTS ITS BENEFICIAL USES:

Overall Use Support	-- Partial	Aquatic Life Support	-- Partial
Fish Consumption	-- Not assessed		

BASIS FOR ASSESSMENT AND COMMENTS:

For the 1994 report, support of the Class B(LW) aquatic life uses was assessed as PS due to high levels of nutrients delivered to the lake in agricultural nonpoint sources.

For the 1996 report, used assessment of support of the Class B(LW) aquatic life uses developed for the 1994 report.

For the 1998 report, the assessments developed for the 1994 and 1996 reports were reviewed and approved by the DNR Wildlife Bureau. Thus, the Class B(LW) aquatic life uses remain assessed as PS due to high levels of nutrients, primarily from agricultural nonpoint sources.

For the 2000 report: SUMMARY: Continued to assess support of the Class B(LW) aquatic life uses as "partially supported." Other beneficial uses remain "not assessed." EXPLANATION: The previous (1998) assessment of support of the Class B(LW) uses ("partially supported") was reviewed and approved by the DNR Wildlife Bureau in 2000.