

6031-014 City of Carpenter



**MITCHELL COUNTY SOIL & WATER CONSERVATION
DISTRICT**

**1529 MAIN STREET
OSAGE, IOWA 50461-1824**

*In Partnership with Iowa Department of Ag & Land Stewardship-Division of Soil Conservation
and*

USDA Natural Resources Conservation Service

**PHONE: (641) 732-5504
FAX: (641) 732-5518**

To: Mark Rosenbury, Chair
Watershed Improvement Review Board

From: Brad Johnson, Chairperson

RE: IWIRB Agreement No. 6031-014 City of Carpenter
Final Project Report for Watershed Improvement Fund Project

The following summarizes the project completed on the City of Carpenter Sewage Treatment system being administered by the Mitchell County Soil & Water Conservation District:

Term of Grant Agreement: November 1, 2006 to October 31, 2009

Financial Ledger for Project: Included at end of final project report

Financial Accountability:

SUMMARY: WATERSHED IMPROVEMENT FUNDS

Grant Agreement Budget Line Item	Original WIRB Funds Approved (\$)	Total Funds Approved (\$), as amended by WIRB Board	Total Funds Expended (\$)	Available Funds (\$)
Engineering- Design	65,000	66,500	66,665	-165
Archaeological Study	4,000	2,500	2,500	0
Property Acquisition/Easements	30,000	30,000	29,835	165
Septic Collection System- low pressure sewer pipe/associated items	96,000	96,000	96,000	0
Septic Collection System-	125,000	168,400	168,400	0

Grinder pump stations/assoc. items				
Septic Collection System—street/railroad/property crossings	27,000	27,000	27,000	0
Lagoon—Controlled Discharge- earthwork	56,000	37,800	37,800	0
Lagoon—Controlled Discharge- piping/valves/discharge	62,000	43,800	43,800	0
Lagoon—Controlled Discharge- rip rap/fence/seeding	35,000	28,000	28,000	0
Total	\$500,000	\$500,000	\$500,000	0

The difference in WIRB funded originally estimated costs verses the amendment costs were related to the engineers estimate costs were used for the initial estimate and the contractor bid amount were utilized for the amended costs. The estimated costs were developed almost 4 years prior to the letting of bids for the project. Manufactured items had increased and labor and fuel related items had decreased.

SUMMARY: TOTAL PROJECT FUNDING

Grant Agreement Budget Line Item	WIRB FUNDS SPENT & PERCENTAGE OF TOTAL PROJECT COSTS ()	CITY/COUNTY FUNDING FOR PROJECT & % OF TOTAL PROJECT COSTS ()	TOTAL PROJECT COSTS
Engineering- Design	66,665 (80%)*	16,480 (20%)	83,145.00
Archaeological Study	2,500 (100%)*	0 (0%)	2,500.00
Property Acquisition/Easements	29,835 (70)*	12,825.93 (30%)	42,660.93
Septic Collection System- low pressure sewer pipe/associated items	96,000 (53%) **	85,324.71 (47%)	181,324.71
Septic Collection System-Grinder pump stations/assoc. items	168,400 (47%) **	193,049.19 (53%)	361,449.19
Septic Collection System—street/railroad/property crossings	27,000 (40%) **	40,588.75 (60%)	67,588.75
Lagoon—Controlled Discharge- earthwork	37,800 (51%) **	35,700.10 (49%)	73,500.10

Lagoon—Controlled Discharge-piping/valves/discharge	43,800 (50%) **	43,602.60 (50%)	87,402.60
Lagoon—Controlled Discharge- rip rap/fence/seeding	28,000 (45%) **	34,702.54 (55%)	62,702.54
Total	\$500,000	\$462,273.82	\$962,273.82

* --These items could pay a maximum of 100% of cost as per agreement with WIRB Board

** -- These items could pay a maximum of 56% of the cost per agreement with WIRB Board

FUNDING SOURCES FOR THE PROJECT

Funding Source	Project Proposal/% of Project	Actual Amount/% of Project
WIRB	\$500,000 51.3 %	\$500,000 52.0 %
Community Development Block Grant- CDBG	\$125,500	\$0
USDA-Rural Development	\$0	\$205,000 Grant
USDA-Rural Development	\$349,500	\$257,273.82 Low Interest Loan
Total	\$975,000	\$962,273.82

Changes in Funding: The CDBG was not chosen for funding through IDED. Because of the low income status of Carpenter, USDA-RD funds (Grant and Loan) became available for use in the fiscal year of planned construction. There were no USDA-RD funds available at time of the original application.

Environmental Accountability

Pre Project Water Quality Concerns:

The City of Carpenter sewer system consisted of a treatment system of failing septic systems (a lot of them steel) with the outlet water going directly into two tile lines. The untreated waste outlet was directly into Deer Creek. The Iowa DNR samplings of the tile showed the following results for Fecal Coli form Bacteria an indicator that sewage is entering the tile:

Date	Amount of fecal coliform bacteria/100 ml
2/23/88	2,200
4/18/90	41,000
12/14/99	2,600
3/15/00	12,000
8/31/00	160,000

Post Project Water Quality:

A two cell lagoon system was designed by Veenstra & Kimm, Inc, PE out of Mason City, Iowa. The system was designed in accordance with section 14.4.6.2 of the Iowa Wastewater Facilities Design Standards. They supervised all construction on the project and certified it was constructed as planned.

The two cell system will operate as a controlled discharge system. Sewage water from the houses, businesses and community center will be transported to the lagoon for treatment. The lagoon water will be drawn down in the spring and fall during high runoff time periods to meet Iowa standards for fecal coliform levels in Deer Creek. Cell #1 has 120 days of effective detention time and cell #2 has 60 days of effective detention time.

The installed system meets the state requirements of:

- Carbonaceous Biochemical Oxygen Demand (CBOD) of 26 mg/liter—Carpenter permit says 22.1
- Total Suspensible solids of 26 LBS/day
- Distance to drinking water wells increased from 50-100 ft. to 2000 ft

Activities and Practices completed were:

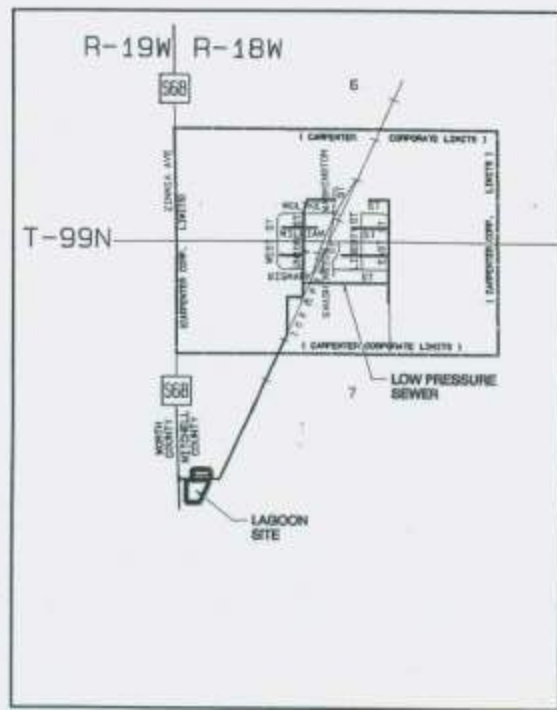
- An information meeting and an official public meeting was held on the project
- NPDES storm water discharge permit was obtained
- Plan of operations and management plan for the new treatment facility was completed
- IDNR/USDA-RD completed a final inspection of the constructed facility
- Practices installed
 1. 60 E-One Grinder pump stations installed for each business/residence/community building in Carpenter
 2. Two stage lagoon system installed according to IDNR/USDA-RD requirements
 3. 12,919 ft of low pressure sewer lines installed to convey the sewage to the lagoon site
 4. Erosion control measures installed to control erosion—rock rip rap, seeding of all disturbed area, gravel, erosion control fabric
 5. 1600 ft. of fence and gate was installed to protect the public from accidental injury
 6. plan map of project practice location attached

Program Accountability

The main challenge to overcome with community projects like the Carpenter project are the time constraints to get the project plans approved by the associated State and Federal Engineers.

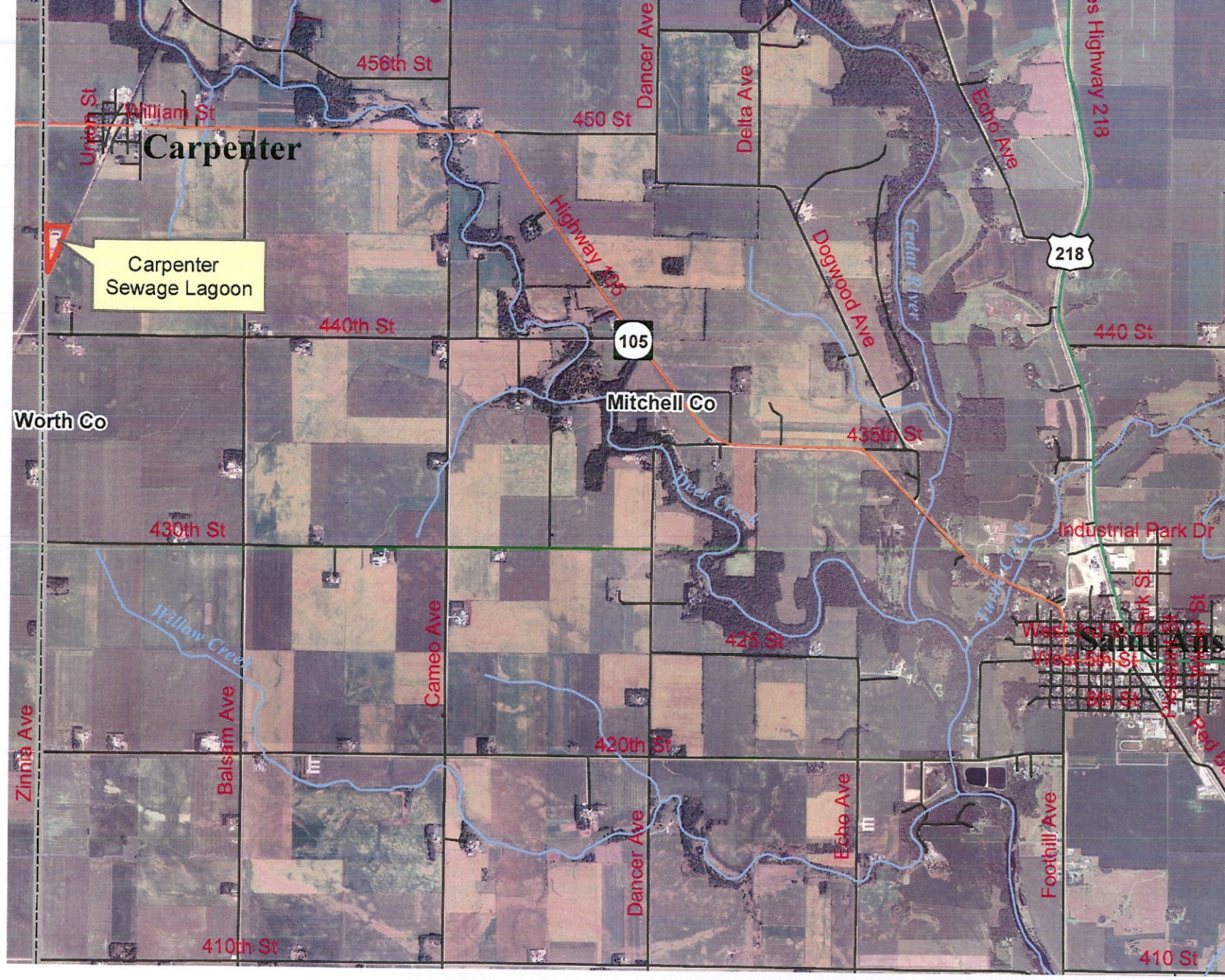
The state wastewater construction permitting process project manual involves 52 steps. A simple concurrence on a step delayed this project for months in a few cases. Final design of the project took two and a half years; construction was completed in less than 6 months. If we would have had bad weather during construction, it would have been difficult to meet the deadlines.

WASTEWATER COLLECTION TREATMENT IMPROVEMENT CARPENTER, IOWA



GENERAL LEGEND	
<p> SURVEY LINE & STATION INDICATION OPENINGS SURFACE ASPHALT SURFACE CONCRETE SURFACE LOW WATER ASPHALT SURFACE GRAVEL SURFACE DIRT SURFACE PAVED SURFACE SURFACE MATERIAL/REPLACEMENT EARTH SECTION NEW MANHOLE/STRUCTURE NEW WATER INTAKE NEW WATER MAIN NEW FORCE MAIN NEW HYDRANT NEW WATER VALVE EXISTING SANITARY SEWER AND SIZ EXISTING STORM SEWER AND SIZ EXISTING WATER MAIN AND SIZ EXISTING FORCE MAIN AND SIZ GAS MAIN AND SIZ UNREINFORCED POWER LINE OVERHEAD POWER LINE UNDERGROUND TELEPHONE LINE CABLE TELEVISION LINE FIBER OPTICS TOP OF MANHOLE TIE OF MANHOLE MANHOLE COVER MANHOLE OPEN INTAKE AREA OF EXISTING INTAKE EXISTING HYDRANT EXISTING WATER VALVE NEW VALVE POWER POLE TELEPHONE POLE STREET LIGHT POLE N/S/W/NE/SW TRAFFIC SIGNAL SIGN TELEPHONE CABLE JUNCTION BOX POSTOFFICE CONTROL, LIGHT RAILROAD CONTROL, LIGHT RAILROAD SIGN UTILITY ACCESS COVER PIPELINE METER VALVE AND SIZ HYDRANT AND SIZ STOP AND SIZ SIGN, SIGNAL OR METER </p>	<p> SURVEY LINE AND STATION OPENINGS SURFACE ASPHALT SURFACE CONCRETE SURFACE LOW WATER ASPHALT SURFACE GRAVEL SURFACE DIRT SURFACE PAVED SURFACE SURFACE MATERIAL/REPLACEMENT EARTH SECTION NEW MANHOLE/STRUCTURE NEW WATER INTAKE NEW WATER MAIN NEW FORCE MAIN NEW HYDRANT NEW WATER VALVE EXISTING SANITARY SEWER AND SIZ EXISTING STORM SEWER AND SIZ EXISTING WATER MAIN AND SIZ EXISTING FORCE MAIN AND SIZ GAS MAIN AND SIZ UNREINFORCED POWER LINE OVERHEAD POWER LINE UNDERGROUND TELEPHONE LINE CABLE TELEVISION LINE FIBER OPTICS TOP OF MANHOLE TIE OF MANHOLE MANHOLE COVER MANHOLE OPEN INTAKE AREA OF EXISTING INTAKE EXISTING HYDRANT EXISTING WATER VALVE NEW VALVE POWER POLE TELEPHONE POLE STREET LIGHT POLE N/S/W/NE/SW TRAFFIC SIGNAL SIGN TELEPHONE CABLE JUNCTION BOX POSTOFFICE CONTROL, LIGHT RAILROAD CONTROL, LIGHT RAILROAD SIGN UTILITY ACCESS COVER PIPELINE METER VALVE AND SIZ HYDRANT AND SIZ STOP AND SIZ SIGN, SIGNAL OR METER </p>

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Carpenter

Carpenter
Sewage Lagoon

Worth Co

Mitchell Co

218

105

Industrial Park Dr

Sanford Ave

430th St

440th St

440 St

435th St

425 St

420th St

410th St

410 St

456th St

450 St

Dancer Ave

Delta Ave

Echo Ave

s Highway 218

Dogwood Ave

Cedar River

Deer Creek

Turkey Creek

Willow Creek

Cameo Ave

Balsam Ave

Zinnia Ave

Dancer Ave

Echo Ave

Foothill Ave

Red Bank St

West 1st St

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