SPECIAL WATER/WASTEWATER UTILITY COMMITTEE AGENDA

Plover Municipal Board Room
2400 Post Road
Plover, WI 54467

Thursday, April 9, 2026
5:00 p.m.

1. Call to order
2. Approval of the minutes of the meeting of February 16, 2026, as printed
3. Persons wishing to address the Committee
4. Approval of vouchers

Discussion with possible action on the following:

5. Recommendation for approval of Engineering Services Agreement for the River Rd. Lift Station upgrade
6. Village of Plover Wastewater Treatment Facility Plan Amendment – Donohue & Associates Report.
7. Sanitary Collection System Master Plan – Donohue & Associates Report.
8. Village project change orders, substitutions, or construction approvals
9. Reports
    a. Water System Manager
    b. Wastewater System Manager
10. Adjournment subject to call of the chair

NOTICE IS HEREBY GIVEN that a majority of the members of the Village Board may attend this meeting to gather information about a subject over which they have decision-making authority.

VILLAGE OF PLOVER
WATER/WASTEWATER UTILITY COMMITTEE
February 16, 2026

Members Present: Gary Wolf, Ross Ballard, Ken Brekke, Marv Hopp, Adam Raabe
Others Present: Karmen Anderson, Adam DeKleyn, Tim Durigan, Steve Fritz, Tracy Karnitz, Scott Klemm, Julia Mann, Matt Saloun, and Al Tessman

1. Mr. Wolf called the meeting to order at 5:13 p.m.

2. Mr. Hopp moved and Mr. Brekke seconded approval of the minutes of January 19, 2026. Motion carried; copy attached.

3. There were no persons wishing to address the Committee.

4. Mr. Raabe moved, and Mr. Brekke seconded approval of the vouchers. Motion carried; copy attached.

Discussion with possible action on the following:

5. **Utility Plans – Green Tree Farm Subdivision – Green Tree Construction Inc – Pleasant Drive/CTH R (PIN: 173230826-16.04)**
   Mr. Saloun reviewed the request. Water Department recommends approval. Mr. Saloun and Mr. DeKleyn reviewed the Wastewater utility plans on behalf of Mr. Lutz who was not in attendance. Staff recommends approval contingent on final AECOM review and acceptance.

*****RECOMMENDATION TO VILLAGE BOARD*** Mr. Raabe moved and Mr. Hopp seconded approval of Utility Plans – Green Tree Farm Subdivision – Green Tree Construction Inc – Pleasant Drive/CTH R (PIN: 173230826-16.04). Motion carried; copy attached.**

6. **Updating Emergency Water Agreement with City of Stevens Point**
   Mr. Saloun reviewed the staff memo and provided background. Discussion ensued regarding historical use and meters.

*****RECOMMENDATION TO VILLAGE BOARD***Mr. Ballard moved and Mr. Brekke seconded approval of the Emergency Water Agreement with City of Stevens Point. Motion carried; copy attached.**

7. **Updating Emergency Water Agreement with Village of Whiting**
   Mr. Saloun reviewed the staff memo and provided background.

*****RECOMMENDATION TO VILLAGE BOARD***Mr. Raabe moved and Mr. Hopp seconded approval of the Emergency Water Agreement with Village of Whiting. Motion carried; copy attached.**

8. **Approval of Well 1 Generator Project Bid**
   Mr. Saloun reviewed the project bid. Staff recommends approval of bid from Eagle Construction. Discussion ensued regarding the specificity of the bid and pricing.

*****RECOMMENDATION TO VILLAGE BOARD***Mr. Raabe moved and Mr. Brekke seconded approval of the Well 1 Generator Project Bid. Motion carried; copy attached.**

9. There were no Village project change orders, substitutions, or construction approvals.

10. Reports
a. Mr. Saloun reviewed his report.
b. There were no questions from the Committee regarding the Wastewater System Manager report.

11. Mr. Raabe moved and Mr. Hopp seconded adjournment at 5:25 p.m. Motion carried.

Submitted by Tracy Karnitz

Report Criteria:
Detail report.
Invoices with totals above $0.00 included.
Paid and unpaid invoices included.
[Report].GL Account Number (3 Characters) = "600"

Vendor	Vendor Name	Invoice Number	Description	Invoice Date	Net Invoice Amount	Amount Paid	Date Paid	Voided
600								
3419	1ST AYD CORPORATION	PSI860245	GLOVES	03/23/2026	186.36	.00		
52	ADVANCED SAFETY TECHNOL	22813W	ANNUAL REFRESHER	03/31/2026	503.47	.00		
56	AECOM	2001125072	TO 1 GENERAL ENGINEERING	03/26/2026	572.24	572.24	03/27/2026	
186	ASPIRUS MEDICAL GROUP INC	155769	AUDIOGRAMS 2026	04/01/2026	161.00	.00		
186	ASPIRUS MEDICAL GROUP INC	156204	JACOBY RESPIRATORY	04/01/2026	50.00	.00		
186	ASPIRUS MEDICAL GROUP INC	156204	LUTZ RESPIRATORY	04/01/2026	50.00	.00		
186	ASPIRUS MEDICAL GROUP INC	156204	ROBINSON RESPIRATORY	04/01/2026	50.00	.00		
195	AT&T- NEW PHONES 831-001-20	9222513114	MARCH	03/19/2026	162.64	162.64	03/20/2026	
3818	BAY TOWEL INC	MARCH 2026	MARCH	04/01/2026	398.25	.00		
446	CELLCOM	877064	CELLCOM	03/23/2026	124.72	.00		
660	CT LABORATORIES LLC	202928	INDUSTRIAL FOG TESTING	03/13/2026	675.00	675.00	03/27/2026	
660	CT LABORATORIES LLC	203339	INDUSTRIAL FOG TESTING	03/31/2026	825.00	.00		
1153	H&S PROTECTION SYSTEMS IN	255954	TEST & INSP FIRE/SECURITY S	01/16/2026	197.50	.00		
1508	LAI LTD	26-63511	PREFILTER WRAPS	03/17/2026	376.00	376.00	03/27/2026	
3905	M.A.D. FABRICATION	199	STEEL MATERIALS	03/24/2026	345.26	.00		
1692	MENARDS INC	38298	AUTO MAINT SUPPLIES	03/13/2026	118.57	118.57	03/20/2026	
1692	MENARDS INC	38508	PIPE FITTINGS	03/18/2026	6.09	6.09	03/20/2026	
1692	MENARDS INC	38530	PLUMBING PARTS FOR W3	03/19/2026	153.14	153.14	03/27/2026	
1784	MOTORS & CONTROLS OF WI L	260274	OPTI V-BELTS	03/26/2026	197.35	.00		
3904	MSTS RECEIVABLES LLC	179746	TOOLS AND SHOP SUPPLIES	03/26/2026	1,003.42	.00		
3904	MSTS RECEIVABLES LLC	179746	TRUCK SUPPIES	03/26/2026	299.98	.00		
1792	MUNICIPAL ENVIRONMENTAL G	260313	MUNICIPAL ENVIRONMENTAL G	03/13/2026	1,487.09	1,487.09	03/20/2026	
1811	NAPA - CENTRAL WI AUTO PAR	2602	VEHICLE MAINTENANCE	03/31/2026	544.89	.00		
1833	NCL OF WISCONSIN INC	533547	LAB STILL PARTS	03/24/2026	1,687.66	1,687.66	03/27/2026	
1847	NETWORK SERVICES COMPAN	40795218	PAPER TOWELS	02/26/2026	173.24	173.24	03/27/2026	
2528	SPEE DEE DELIVERY SERVICE	1441391	SPEE DEE DELIVERY SERVICE	03/28/2026	43.32	.00		
2624	SUMMIT FIRE COMPANIES	3861727	ANUUAL FIRE EXTINGUISHER I	02/13/2026	1,250.00	1,250.00	03/27/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	AMAZON	03/16/2026	36.29	36.29	03/20/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	AMAZON	03/16/2026	45.08	45.08	03/20/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	AMAZON	03/16/2026	31.34	31.34	03/20/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	AMAZON WEB	03/16/2026	.52	.52	03/20/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	TULUM	03/16/2026	175.00	175.00	03/20/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	WWOA	03/16/2026	93.15	93.15	03/20/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	CSWEA	03/16/2026	110.00	110.00	03/20/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	OSI BATTERIES	03/16/2026	258.80	258.80	03/20/2026	
2843	US CELLULAR	796455334	MARCH PHONES	03/31/2026	82.23	.00		
2931	VILLAGE OF PLOVER WATER U	Q1 2026	Q1 2026	04/01/2026	3,009.32	.00		
2955	VORPAHL FIRE & SAFETY	215418493	VORPAHL FIRE & SAFETY	03/20/2026	259.89	259.89	03/27/2026	
	Total 600:				15,743.81	7,671.74		
	Grand Totals:				15,743.81	7,671.74		

Vendor	Vendor Name	Invoice Number	Description	Invoice Date	Net Invoice Amount	Amount Paid	Date Paid	Voided

Dated:

_____

Village President: Gary Wolf

_____

Village Board :

Steve Fritz: _____

Tim Durigan: _____

Ross Ballard: _____

Adam Raabe: _____

Al Haga: _____

Al Tessman: _____

Administrator: Steve Kunst

_____

Vendor	Vendor Name	Invoice Number	Description	Invoice Date	Net Invoice Amount	Amount Paid	Date Paid	Voided

Report Criteria:

Detail report.

Invoices with totals above $0.00 included.

Paid and unpaid invoices included.

[Report].GL Account Number (3 Characters) = "600"

Report Criteria:
Detail report.
Invoices with totals above $0.00 included.
Paid and unpaid invoices included.
[Report].GL Account Number (3 Characters) = "700"

Vendor	Vendor Name	Invoice Number	Description	Invoice Date	Net Invoice Amount	Amount Paid	Date Paid	Voided
700								
25	ABT MAILCOM	55050	Q1 2026 MAILED	03/27/2026	3,706.68	.00		
25	ABT MAILCOM	55050	Q1 2026 PAPERLESS	03/27/2026	50.00	.00		
52	ADVANCED SAFETY TECHNOL	22813W	ANNUAL REFRESHER	03/31/2026	503.46	.00		
56	AECOM	2001125072	TO 1 GENERAL ENGINEERING	03/26/2026	572.25	572.25	03/27/2026	
123	AMERICAN WELDING & GAS IN	0011550409	AMERICAN WELDING & GAS IN	03/26/2026	53.62	.00		
186	ASPIRUS MEDICAL GROUP INC	155769	AUDIOGRAMS 2026	04/01/2026	138.00	.00		
186	ASPIRUS MEDICAL GROUP INC	156204	TRZEBIATOWSKI	04/01/2026	406.00	.00		
195	AT&T- NEW PHONES 831-001-20	9222513114	MARCH	03/19/2026	108.43	108.43	03/20/2026	
422	CARGILL INC - SALT DIVISION	2912197356	CARGILL INC - SALT DIVISION	03/19/2026	7,207.77	7,207.77	03/27/2026	
682	DAKOTA SUPPLY GROUP	S105530804.0	PLUMBING FITTINGS	03/20/2026	38.65	38.65	03/27/2026	
682	DAKOTA SUPPLY GROUP	S105537831.0	TOILET	04/01/2026	390.70	.00		
3442	HUNGERFORD & TERRY INC	RS06660-IN	TREATMENT RESIN	03/24/2026	15,741.20	15,741.20	03/27/2026	
1251	HYDROCORP INC	CI-12089	HYDROCORP INC	03/31/2026	1,165.00	.00		
3380	IDEXX LABORATORIES	3197568935	BACTI TESTING	03/30/2026	32.90	.00		
3380	IDEXX LABORATORIES	3197630373	BACTI TESTING	03/31/2026	348.66	.00		
1652	MARTELLE WATER TREATMEN	31213	MARTELLE WATER TREATMEN	03/18/2026	2,386.37	2,386.37	03/27/2026	
1692	MENARDS INC	38439	ELECTRICAL SUPPLIES	03/17/2026	152.16	152.16	03/20/2026	
1692	MENARDS INC	38789	LP TANK EXCHANGE	03/24/2026	19.92	19.92	03/27/2026	
1692	MENARDS INC	38845	DRIVE SET	03/25/2026	34.97	34.97	03/27/2026	
1692	MENARDS INC	38932	BINS	03/27/2026	19.21	.00		
1692	MENARDS INC	39217	BASE TRIM	04/01/2026	164.45	.00		
1811	NAPA - CENTRAL WI AUTO PAR	433378	LAWN TRACTOR MAINT	03/05/2026	31.55	.00		
3277	POINT SUPPLY LLC	9583	TOWELS, WIPES	04/01/2026	256.63	.00		
2196	PUBLIC SERVICE COMMISSION	2602-I-40737	4737-CW-106 WELL 1 GENERAT	03/17/2026	1,169.04	1,169.04	03/20/2026	
2287	RIESTERER & SCHNELL INC	9251194	JD BLADES	03/13/2026	88.11	88.11	03/20/2026	
2528	SPEE DEE DELIVERY SERVICE	1445314	FLUORIDE	03/28/2026	7.95	.00		
2624	SUMMIT FIRE COMPANIES	3859999	ANUUAL FIRE EXTINGUISHER I	02/12/2026	385.25	385.25	03/27/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	INDEED	03/16/2026	510.60	510.60	03/20/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	AMAZON	03/16/2026	199.94	199.94	03/20/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	AMAZON	03/16/2026	159.98	159.98	03/20/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	AMAZON	03/16/2026	207.99	207.99	03/20/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	PIZZA RANCH	03/16/2026	80.44	80.44	03/20/2026	
2841	US BANK - VILLAGE VISA CHAR	FEBRUARY 20	STAPLES	03/16/2026	569.97	569.97	03/20/2026	
2931	VILLAGE OF PLOVER WATER U	Q1 2026	Q1 2026	04/01/2026	215.00	.00		
3748	VMC LLC	1790	LINCOLN AT&T	03/27/2026	1,800.00	.00		
3024	WELD RILEY SC	Feb 26 Legal	FEB 26 LEGAL	03/20/2026	300.00	300.00	03/20/2026	
	Total 700:				39,222.85	29,933.04		
	Grand Totals:				39,222.85	29,933.04		

Vendor	Vendor Name	Invoice Number	Description	Invoice Date	Net Invoice Amount	Amount Paid	Date Paid	Voided

Dated:

_____

Village President: Gary Wolf

_____

Village Board :

Steve Fritz: _____

Tim Durigan: _____

Ross Ballard: _____

Adam Raabe: _____

Al Haga: _____

Al Tessman: _____

Administrator: Steve Kunst

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Report Criteria:

Detail report.

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Paid and unpaid invoices included.

[Report].GL Account Number (3 Characters) = "700"

Wastewater System Memo

To: Steve Kunst, Gary Wolf, Utility Committee, Village Board
From: Lyle Lutz
Date: March 16, 2026
Subject: ***River Rd. Lift Station*** *Upgrade Engineering Services Agreement R****ecommendation***

The attached request for proposals (RFP) was distributed to 7 selected engineering firms for their consideration in providing complete engineering services involved in the River Road lift station reconstruction. We received a total of three proposals that were all complete in detail with the necessary information requested in the RFP. All three of the firms had visited or had prior knowledge of the River Dr. lift station and understood the scope of this project. One of the noted differences between the proposals was the varying timeline for progression of the project. Two of the proposals held a shorter projected completion schedule for late 2026/early 2027 and one proposal with construction to be substantially complete later in 2027. The Village recognizes that there were no specific guidelines on timeline in the RFP as this was not an emergency replacement or the lift station having any immediate threats to premature failure of the current structures and could be flexible on schedule planning.

Attached is a comparison of the received proposal fee development schedules for each. The 2026 Wastewater Utility budget included engineering services accounting for this specific project at a conservative estimated amount of $190,000.00 which also accounted for potential construction observation/inspection fees. The RFP has removed the construction and on-site inspection services as this will be handled by Utility Staff and reducing that portion of the engineering expense. Due to the estimated full project timing, much of the expense of the upgrade construction process will likely be incurred in 2027. The 2026 Capital Outlay did include accounting for the designed construction and would carry over into 2027 for its substantial completion.

After reviewing the proposals with administration and contacting a few of the references provided for each, the recommendation is to award engineering services to Clark Dietz, Inc. The project manager and design team are in their Wausau branch office. The full proposal from them is attached for your review.

VILLAGE OF PLOVER

2400 POST ROAD - PO Box 37 - PLOVER, WISCONSIN 54467
WWW.PLOVERWI.GOV

January 30, 2026

XXXXXXXXXXX
XXXXXXXXX
XXXXXXXXXXXX

RE: Request for Proposals
Village of Plover Wastewater Utility - River Road Lift Station Upgrade

The Village of Plover is seeking proposals from a select group of consultants for engineering services associated with the upgrade of River Road Lift Station. Electronic PDF proposals are due by 3:00 pm on February 27, 2026. Email your proposal to LLutz@ploverwi.gov.

The scope of engineering services includes design and bidding services to complete the following lift station improvements:

- New wetwell including:
  - Piping, two submersible pumps, and removal rail system
  - Access hatch cast into top slab
  - Level transducer and float backups

- New at-grade valve vault including:
  - Common slab with wetwell
  - Insulated, heated enclosure with maintenance access panels
  - Check valves, isolation valves, air release valve, sample connection, pressure gauges, and bypass pumping/forcemain connection in vault

- Electrical and controls upgrades to existing panel enclosure including new:
  - Variable frequency drives – Specified Danfoss Drives
  - Allen Bradley MicroLogix PLC
  - Allen Bradley Panelview Plus
  - Uninterruptable power supply
  - Conduits and wiring between existing panel and new lift station
  - Integration for existing telemetry communication

- Site piping, grading, electrical, controls, and demolition improvements to complete the new lift station and remove the existing lift station.

SCOPE OF SERVICES

Pre-Design Phase

1. Conduct a project kickoff meeting. Review and discuss objectives, requirements, preferences, project communication protocols, project workflow, and project schedule.

2. Subcontract survey services for the project site. Survey will include establishing two benchmarks.
3. Subcontract geotechnical services for the project site. Obtain information on two borings and a geotechnical report.
4. Request information from the Village pertinent to the project.
5. Evaluate existing and projected wastewater flow information to size the new lift station. Prepare design basis sizing information.
6. Develop hydraulic calculations and a hydraulic profile through the new lift station and forcemain to select pump duty points. Insert this information into the design basis sizing information.
7. Finalize design basis sizing information and prepare a conceptual site layout drawing. Review design basis and site layout drawing with the Village and incorporate comments.

Design Phase

8. Prepare preliminary layout drawings. In general, these drawings will delineate:
    a. Major removals
    b. Site piping, grading, and utility improvements
    c. Wetwell with dimensions
    d. Valve vault with dimensions
    e. Cross section with elevations
    f. Major equipment outlines
    g. Equipment access requirements and provisions
9. Prepare an opinion of probable construction cost (OPCC) based on the preliminary layout drawings.
10. Conduct a preliminary layout package review meeting to receive comments and questions from Village. Document the meeting by preparing and delivering meeting notes.
11. Prepare final layout drawings further refined to incorporate the identified revisions from the review meeting. In addition to refinement of the preliminary layout drawings, this set will include a draft electrical one-line diagram and a draft process and instrumentation diagram (P&ID).
12. Update the OPCC based on the final layout drawings.
13. Produce internally reviewable bidding documents (drawings and specifications). Perform an internal designer review and conduct internal designer review coordination meetings.
14. Prepare a bypass pumping plan along with a potential construction sequence and list of construction constraints.
15. Incorporate revisions to the draft bidding documents and submit to the Village for review.
16. Update the OPCC based on the draft bidding documents.
17. Conduct a draft bidding documents review meeting to receive comments and questions from Owner. Document the meeting by preparing and delivering meeting notes.

18. Following review meeting and with the Village's approval, prepare and submit the lift station project to the WDNR including the checklist, forms, plans, and specifications for review and approval.
19. Incorporate Owner review comments and WDNR comments into final bidding documents.

Bidding Assistance

20. Provide electronic distribution of bidding documents.
21. Develop and submit to Village legal advertisement language for advertisement in the Village's official news publication.
22. Attend and conduct a Pre-Bid Meeting.
23. Respond to bidder questions and prepare addenda as necessary.
24. Conduct virtual bid opening.
25. Submit a tabulation of bid results.
26. Review bids and submit a letter of recommendation for award.
27. Prepare notice of award.

Construction/post-construction

28. Prepare Conformed to Contract (CTC) documents incorporating changes from addenda and contracting.
29. Assist the Village with issuing the executed construction contract upon satisfactory execution of the agreement and submission of bonds and insurance by the contractor.
30. Assist the Village in preparation of the Notice of Award and Notice to Proceed for the contractor.
31. Prepare for and conduct pre-construction meeting.
32. Assist the Village by responding to contractor RFIs and addressing contractor questions.
33. Prepare contract change orders for approval by the Village.
34. Provide technical review and approve, or take other appropriate action, in respect to Shop Drawings, O&M Manuals, and other data that the contractor is required to submit.
35. Designer Site Visits - Make visits to site to observe the progress of the work (Assume 2 site visits per engineering discipline – civil, structural, electrical, and controls).
36. Assist the Village with startup, walk through, and punch list preparation (Assume 5 site visits).
37. Prepare record drawings in electronic format incorporating contractors submitted markups for changes during construction.

PROPOSAL REQUIREMENTS

Consultant proposals shall include the following sections:

- Firm introduction and qualifications
- Similar projects with references
- Project team

- Project understanding, scope, and schedule
- Fee proposal
- Team resumes

Thank you for your interest in this project, and feel free to contact me at 715.345.5259 to discuss this request. I will be out of the office on vacation from February 6th-15th with limited access to email and resources for information requests during that period. The Assistant Manager, Logan Elsholtz, can be contacted here at the utility during that period as well.

Sincerely,



Lyle Lutz

Wastewater System Manager

Comparison of River Road Lift Station Engineering Services Proposals

Engineering Firm	*Task*	*Fee*	*Total*
Clark & Dietz			
	Pre-Design	$14,900.00	
	Design Phase	$38,100.00	
	Bidding Assistance	$4,900.00	
	Construction/Post Construction	$28,600.00	
			$86,500.00
Donohue			
	Preliminary Design	$17,290.00	
	Design Phase	$49,250.00	
	Bidding Assistance	$3,230.00	
	Construction/Post Construction	$47,080.00	
			$116,850.00
Aecom			
	All Inclusive - Not to exceed		***$129,300.00***

REQUEST FOR PROPOSAL

River Road Lift Station Upgrade

ENGINEERING SERVICES



Village of Plover, Wisconsin

February 27, 2026

Clark Dietz

Engineering Quality of Life®

Clark Dietz

Engineering Quality of Life®

February 27, 2026

Lyle Lutz
Wastewater System Manager
Village of Plover
2400 Post Road - PO Box 37
Plover, Wisconsin 54467

RE: Request for Proposal
River Road Lift Station Upgrade
Village of Plover, Wisconsin

Dear Lyle:

We at Clark Dietz are excited to work with the Village of Plover on the River Road Lift Station Upgrade. Clark Dietz is well versed in the field and has successfully completed lift station replacements and rehabilitations of similar nature for a range of municipalities across the Midwest.

The goal of this project is to upgrade the existing River Road lift station. While visiting the site with Logan Elsholtz, he pointed out that the station has no operational issues, but it is time for an update. Logan indicated that you'd like us to follow the design standards used for the Roosevelt lift station. Standardization of stations is beneficial to communities for many reasons, including ease of maintenance and operator familiarity. It is a concept we have utilized in the past on designs for the City of Wausau and the City of New Berlin, as described in the attached project descriptions.

In this proposal I have presented a talented, experienced team to provide the scope of services to you in a thorough manner. As you'll see from the enclosed information, this team has worked together on many lift station improvement projects. **Our overall project experience shows we bring the history and background necessary to hit the ground running. We are deeply knowledgeable in the challenges of this type of lift station project. Our team has worked with many other communities on similar projects to overcome the difficulties of replacing an existing station while maintaining operation during construction.** As the project manager, I will be your primary point of contact and will lead the project planning, design, bidding, and construction phases. I have over 25 years of experience in infrastructure planning, design, and construction, including lift station design. My focus will be on keeping you and your staff informed throughout the project.

Thousands of Wisconsin taxpayers have benefited from our sanitary sewer system consulting work because we focus on revitalizing aging infrastructure, improving service, protecting public health, reducing risk of property damage, and creating sound spending plans to handle future growth and renewal.

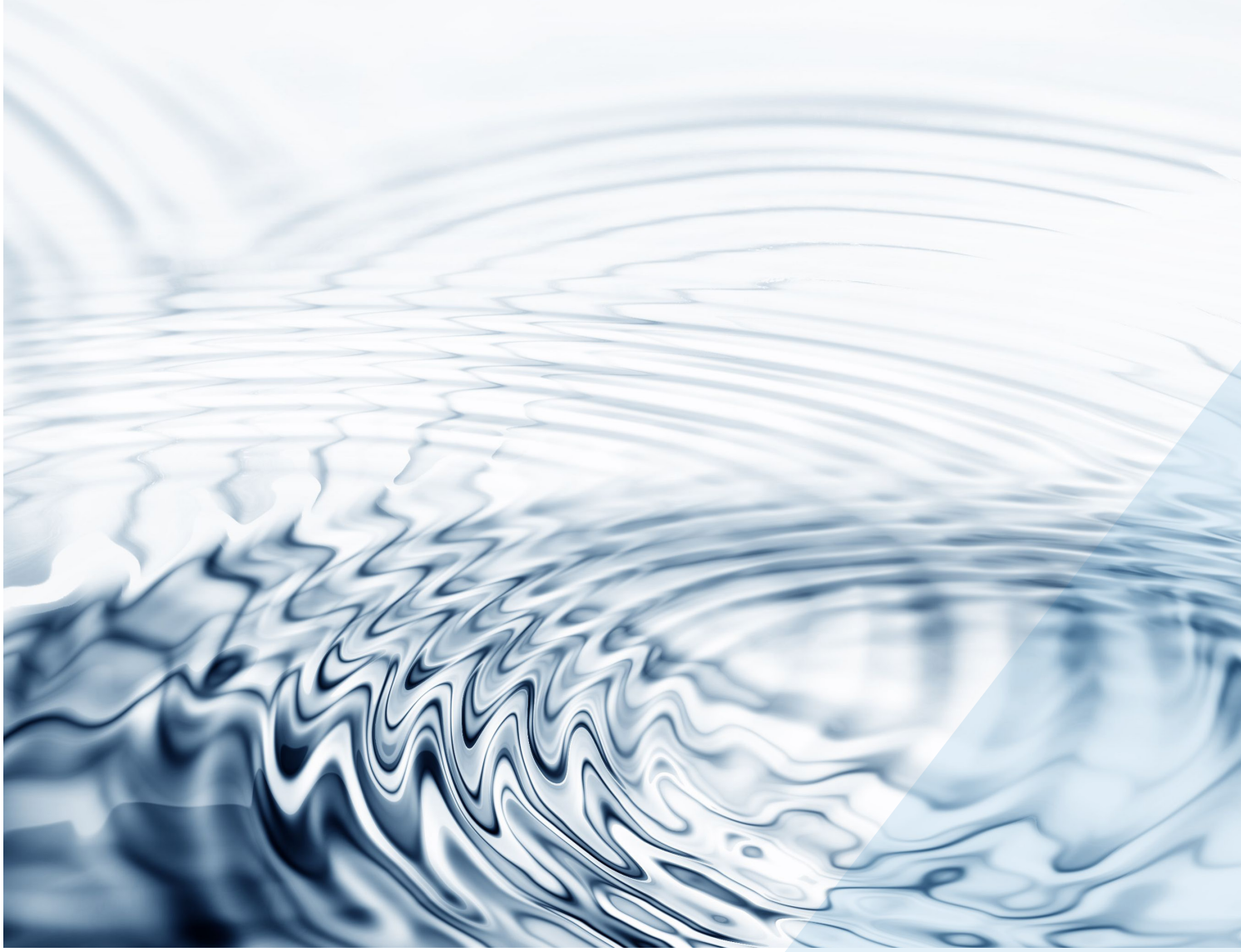
Clark Dietz is committed to providing excellent service to Plover. We are available to start immediately. Please contact me with any questions about our proposal.

Sincerely,

Clark Dietz, Inc.

Diane L. Thoune

Diane L. Thoune, PE
Project Manager
diane.thoune@clarkdietz.com



ENGINEERING SERVICES

RIVER ROAD LIFT STATION UPGRADE

VILLAGE OF PLOVER, WI // REQUEST FOR PROPOSAL

TABLE OF CONTENTS

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QUALIFICATIONS OF FIRM



Clark Dietz

AN ENR 500 TOP DESIGN FIRM

ABOUT US

Clark Dietz, Inc. is a multi-disciplined consulting engineering firm operating from offices in Illinois, Indiana, Kentucky, Michigan, and Wisconsin. Our primary areas of service include civil and environmental infrastructure, transportation, structural, mechanical, and electrical engineering.

OUR SERVICES

Infrastructure goes beyond the functional. It is the foundation that connects people, revitalizes communities, spurs economic growth, and protects the environment. It is what we do, who we are, and why we serve.

OUR PHILOSOPHY

As experienced consultants, we serve as trusted advisors to our clients. As partners, we become fully vested in achieving their goals. We believe in serving our clients to our utmost capacity, period. We operate with integrity, foster collaboration, and expect excellence in all we do. For more than 70 years we have built a reputation for the integrity of our work, our actions, and our results. With an unwavering commitment to our clients, we stand behind everything we do.

BELONGING AND OPPORTUNITY

At Clark Dietz, we believe that the strength of our firm lies in the diverse perspectives, experiences, and talents of our people. As an employee-owned company, we succeed together by cultivating a workplace where every individual feels valued, empowered, and motivated to contribute their best. We are committed to creating an environment where team members can show up authentically and thrive—personally and professionally. Our focus is on fostering engagement, belonging, and collaboration, ensuring that everyone has a fair opportunity to grow and contribute to our shared success. We believe that when people belong, they excel—and when they excel, we all benefit.

SUSTAINABILITY

Nature's most precious assets need our protection and we take this responsibility seriously. Our specialists in environmental science, green infrastructure, and our LEED Accredited professionals thoroughly assess the impact a design may have on energy consumption, waterways, habitat, vegetation, and water quality. At Clark Dietz, we are fully committed to optimizing the benefits of sustainability in every solution we design.

OUR HISTORY

Our roots go back to the 1940's to three University of Illinois Engineering professors; James Clark, Eugene Daily, and Jess Dietz. These three formalized their association by incorporating in 1953. By the late 1970s Clark Dietz was a recognized leader among Midwest-based civil engineering companies serving clients from seven regional offices. The original owners sold the firm and it was ultimately owned by CRS Sirrine, one of the nation's largest engineering and architectural firms. Through an employee buy-out of the Champaign office and the name, Clark Dietz again became a privately held corporation in 1987. Employee ownership has been a key factor in the success of the firm, with approximately 30 percent of current employees now owning stock in the company and all employees participating through an ESOP. Today Clark Dietz employs more than 200 professionals in 13 offices.

OUR LOCATIONS



35 ENGINEERING AWARDS

Since 2021



Together, we're building stronger teams and delivering better solutions—for our clients, our communities, and each other.

CIVIL/STRUCTURAL
WATER RESOURCES
TRANSPORTATION
TRAFFIC
MECHANICAL
ELECTRICAL
CONSTRUCTION









ClarkDietz

Engineering Quality of Life®

Our work is driven by purpose. To have a positive impact on people, the natural environment, and the economic well-being of our client communities. We are engineering more than infrastructure, we are engineering quality of life.

ENGINEERING SERVICES

WATER, WASTEWATER, STORMWATER

Supply, Distribution, Storage
System Modeling and Studies
Facility and Master Plans
Treatment Processes
System Renewal and Rehabilitation
Sanitary Sewer Collection Systems
CSOs and SSOs
I/I Evaluation and Characterization
Geospatial Asset Management

MECHANICAL AND ELECTRICAL

Heating, Ventilation, Air Conditioning
Chiller and Boiler Plants
Facility Piping Systems
Power Distribution Systems
Energy Modeling
Building, Site, Roadway Lighting
Plumbing and Fire Protection
SCADA, Automation, Controls
Security and Telecom
ARC Flash Hazard Analysis

TRANSPORTATION

Public Involvement
Streetscaping and Lighting
Traffic Engineering
Roadways and Highways
Multi-Modal Transportation
Intersection Design
Urban Drainage
Structural Engineering

MUNICIPAL SERVICES

Municipal Engineering
Development Reviews
Roadway Maintenance
Storm, Sewer, Water Main Maintenance
Regulatory Compliance and Reports
Grant Funding Assistance
Capital Planning
Land Acquisition

CONSTRUCTION

Resident Engineering
Observation Services
Construction Layout
Documentation
Cost and Schedule Control

RENEWABLE ENERGY

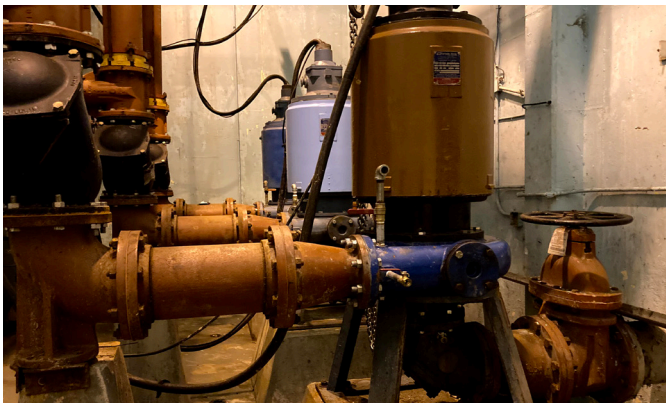
Feasibility Assessments
Conceptual Design
Civil/Electrical/Structural Analysis

Pebble Valley Pump Station

EVALUATION AND UPGRADE

Waukesha, WI









CONSTRUCTION COST
$1,382,000

PROJECT DURATION
5/1/2020 - 12/31/2021

PROJECT TEAM
Diane Thoune, PE
Tom Foley, PE
Sean Marzano, SE, PE
Paul Zouski, PE

OWNER CONTACT
Christopher Langemak, PE
Engineer
City of Waukesha
262.524.3598
clangemak@waukesha-wi.gov

Our first project with the City of Waukesha, Clark Dietz was awarded the Pebble Valley Pump Station evaluation and upgrade. Our scope included the replacement of the three existing vertical centrifugal pumps as well as the adjacent process piping and valves. All station electrical components were replaced, including the pump control panel, the motor control center, and the incoming electric service. An emergency generator set in a sound-attenuating enclosure was added to power all station equipment during the event of a power outage. In addition, we renovated the station building with new glass block windows, new paint/coatings, HVAC equipment, a new stairwell, and a hoist for easier removal of the pumps and fittings.

Prior to Clark Dietz's involvement, a flow study was completed to determine the amount of clearwater inflow into the facility. However, the study was completed during significant precipitation and flooding events; the City had since mitigated the inflow of clearwater into the system, and continues to monitor their mitigation strategies. In a review of the study, we recognized that the study specified pumps of much larger capacity than was realistically needed to handle the City's reasonable peak flow. Clark Dietz's commitment to Waukesha was demonstrated in designing a solution that wasn't oversized and unnecessarily costly. The City trusted that Clark Dietz brought our best-practices gained from significant pump station experience.

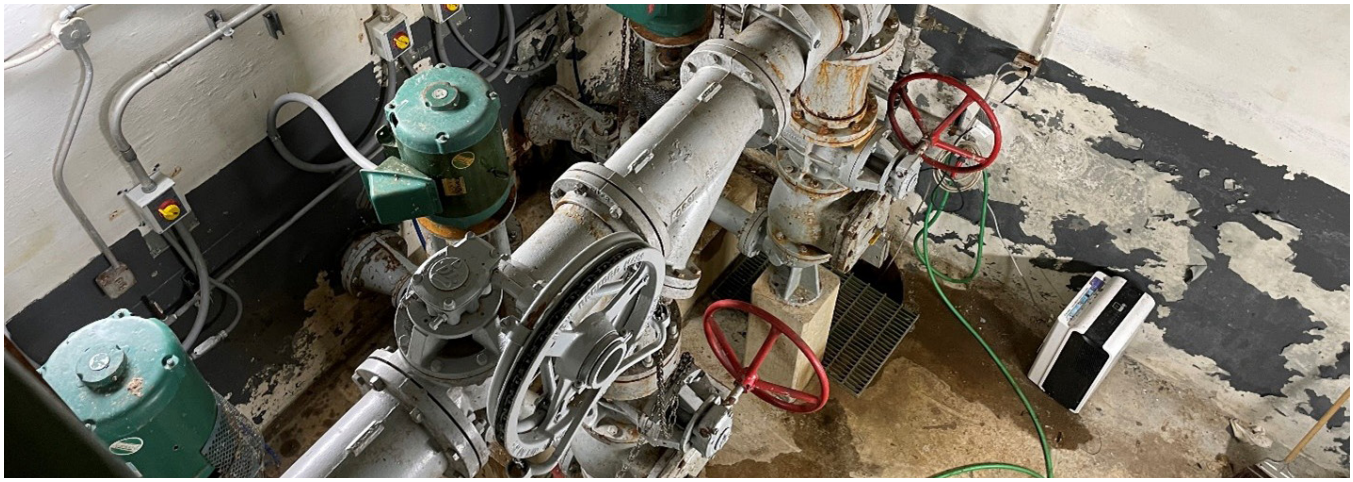
CLARK DIETZ ADDED VALUE

- During construction, we found that the wet well cover was in worse condition than expected; we helped redesign the cover for long-term performance.
- We collaborated with City staff to design ease of maintenance and improve worker safety by installing a hoist system and replacing a dangerous spiral staircase with a standard stairwell.
- Waukesha appreciated that Clark Dietz brought a new perspective and different design elements than they were used to in the past. We didn't take prior work and studies as sole-source information.

2022 Sanitary Lift Stations Rehab/Replacement

Wausau, WI





PROJECT CONSTRUCTION COSTS AND COMPLETION DATES:

Northwestern and Greenwood Hills Lift Stations: $997,698, 8/2024

Cherry Street Lift Station: $825,000, 6/2026 (est.)

Crocker Street Lift Station: $1,371,000 (est.), 6/2027(est.)

PROJECT TEAM

Diane Thoune, PE
Tom Foley, PE
Rob Watt, PE
Sean Marzano, SE, PE
Paul Zouski, PE

OWNER CONTACT

Eric Lindman
Director of Public Works and Utilities
City of Wausau
715.261.6745
Eric.Lindman@ci.wausau.wi.us

At the request of City staff, Clark Dietz performed site visits at six of the City's lift stations in September 2021 to develop the scope of work that would be included in a future Request for Proposals for the lift station design work. We submitted a successful proposal to the City and in May 2022 we were selected to complete design and construction services for the lift station rehabilitation.

The stations were divided into five bid packages. The first two stations, Northwestern and Greenwood Hills were very similar stations with submersible pumps, an underground valve vault, and an above ground electrical panel. Safety was a major concern at these stations; the electrical panel door at Northwestern opened directly over the wet well hatch. Using a design preferred by Wausau staff that we had previously utilized at another station, both stations were redesigned to include an above-ground enclosure that houses the valves and pump control panel. All electrical equipment was replaced, and an emergency generator was installed at the Northwestern lift station. The new stations eliminated confined spaces and made access to the panels and wet wells safer for staff.

The third lift station on the list of upgrades, the Cherry St. Lift Station, is currently under construction, while the fourth station, the Crocker Street Station, will bid in March 2026.

The design of the other two stations is currently 90% complete. These stations will be bid and constructed as City funds become available. One of those stations will include the same type of submersible pumps/above-ground enclosure as the Northwestern and Greenwood Hills stations. The final station will remain in its original building and will include new pumps, controls, electrical equipment, a generator, and an influent screen.

Westridge Lift Station Rehabilitation

New Berlin, WI



CONSTRUCTION COST
$1,356,439

PROJECT DURATION
6/1/2021 - 12/25/2024

PROJECT TEAM
Diane Thoune, PE
Sean Marzano, SE, PE
Paul Zouski, PE

OWNER CONTACT
Alex Parker
Utility Manager
City of New Berlin
262.786.7086
nbutilities@newberlin.org

Clark Dietz has collaborated with New Berlin on rehabilitation of several of their aging lift stations. This lift station upgrade project included replacement of an existing below-ground enclosure with flooded suction pumps. The station was over 30 years old, staff had safety concerns about the station elevator, and the pumps were no longer running efficiently. We selected two new submersible pumps for installation in the existing wet well. Modifications were made to the cover and interior of the wet well. A new masonry building was designed to house the piping, control panels, and a generator set. Additional upgrades included a davit crane and lighting near the wet well. The site is bounded by a park-and-ride lot, Interstate 43, and a detention pond. Clark Dietz worked with the City's Planning and Zoning department to make all improvements within the existing easement.

72nd Avenue Lift Station

Wausau, WI







CONSTRUCTION COST
$884,945

PROJECT DURATION
4/2016 - 1/2019

PROJECT TEAM
Diane Thoune, PE
Sean Marzano, SE, PE
Paul Zouski, PE

OWNER CONTACT
Eric Lindman
Director of Public Works and Utilities
City of Wausau
715.261.6745
Eric.Lindman@ci.wausau.wi.us

While finding sound technical solutions are our responsibility, we owe our clients the opportunity to fulfill their vision in making their communities a better place to live and work. With our approach to this project, as well as many others, Clark Dietz believes that our open and collaborative approach supports our mission to **increase the community's quality of life** every time we are involved in a project.

What began as a lift station design and construction management project for the 72nd Avenue lift station became a long-term management plan for the City's westside industrial park area. Working closely with Wausau staff, Clark Dietz was responsible for planning, design, bidding, and construction management services. When taking the lead role on a project, we don't just respond to the immediate need. In this case, we looked at the full impact of the lift station improvements to the collection system to ensure that the City of Wausau was set up for future success.

As design started, it quickly became apparent that a long-term plan was needed for the area. The 72nd Avenue lift station serves the City's industrial park, and extensive future growth had to be considered in the design. The 72nd Avenue station discharges to the Industrial Park lift station, which also required extensive upgrades to handle the future flow. The project included a planning study, sewer capacity analysis, design of both lift stations, design of a new force main and interceptor sewer, construction management services at both lift stations, and rehabilitation of the Industrial Park lift station force main.

A completely new station was designed to replace the existing 72nd Avenue station. The new station includes a precast wet well, two submersible pumps, and a new masonry building that houses all piping, controls, and an emergency generator set. The existing wet well, suction lift pumps, and building were demolished and removed.

At the Industrial Park lift station, Clark Dietz selected a new pump and motor to be installed in the existing station. During the design phase, the City of Wausau performed additional flow and pressure tests at the lift station. Clark Dietz then reevaluated the projected future flows expected at the station. Also included was recalculation of the future flows to the station from the 72nd Avenue lift station. The new pump was sized to handle the expected 20-year design flows. Work at the station also included complete replacement of the electrical system and controls. In a second phase, we continue to assist the City with force main cleaning and televising. In the second phase, the two remaining original pumps were replaced.

Since the existing sewer downstream of the 72nd Avenue station was not capable of handling the future flows, Clark Dietz designed a new force main and interceptor sewer from the 72nd Avenue lift station to the Industrial Park station. The new force main and interceptor sewer were sized to handle the expected 20-year design flow from the 72nd Avenue lift station service area. This part of the project took place in three phases. In the first phase, design proceeded to the 90% completion point. The design documents were then placed on hold while the City of Wausau coordinated funding and a road reconstruction project. Coordination with the road project occurred during Phase 2, and the project documents were finalized. Phase 3 included project bidding.

Trotzer Lane and Ryan Street Lift Stations

Weston, WI









PROJECT DURATION
4/2021 - 12/2021

PROJECT TEAM
Diane Thoune, PE
Tom Foley, PE
Sean Marzano, SE, PE
Paul Zouski, PE

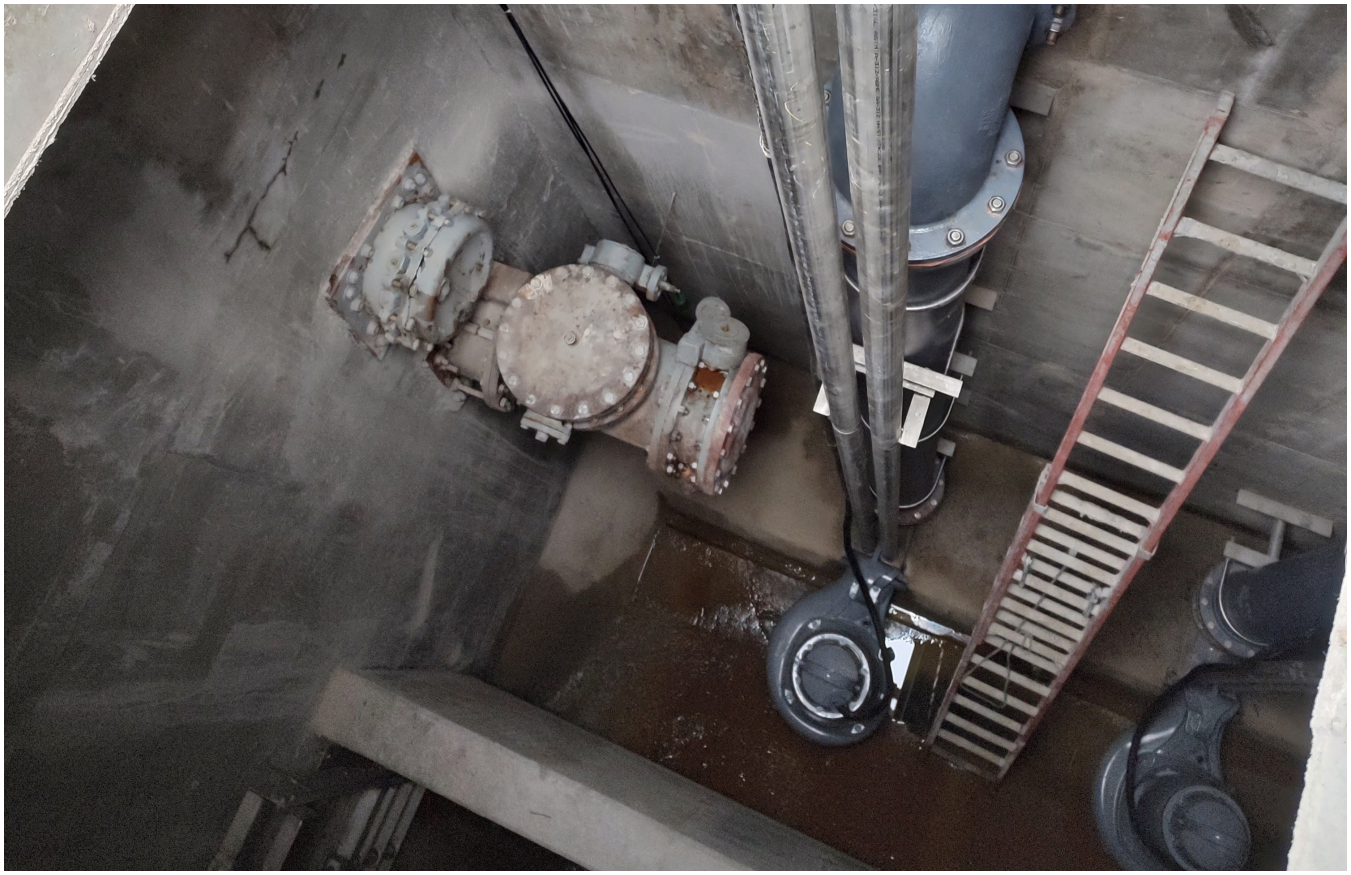
OWNER CONTACT
Michael Wodalski, PE
Director of Public Works
Village of Weston
715.241.2636
mwodalski@westonwi.gov

Clark Dietz staff was in the process of designing a water main and sewer crossing of the Eau Claire River in Weston when the Village decided to also award Clark Dietz the design of the new Trotzer Lane lift station. The lift station was designed to serve an existing subdivision on the north side of the river. This allowed the residents to connect to the municipal sewer system and abandon their aging septic systems. The project also allows for extension of the sewer system to the east, where additional development is expected.

The Trotzer Lane lift station consists of a new wet well, valve vault, and emergency generator. The design is similar to the Village's other stations, which allows for easier maintenance. A mixer was installed in the wet well to help prevent grease buildup. The pump control panel was designed for connection to the Village's future SCADA system.

The project also included the design of upgrades at the Ryan Street lift station, which receives flow from the Trotzer Lane station. Ryan Street had sufficient capacity, but updates were needed. The control panel was upgraded to allow for future connection to a SCADA system. A mixer was installed in the wet well. New piping and a drain were installed in the existing valve vault. The top elevation of the vault was raised and the interior of the vault was coated with a waterproofing coating to prevent future flooding. A manhole was installed on the force main downstream of the station for future installation of a flow meter. An onsite emergency generator was installed while the existing portable generator plug was retained as a backup.

RELEVANT PROJECT EXPERIENCE AND EXPERTISE



FIRM LIFT STATION/FORCE MAIN EXPERIENCE

Below is a selection of Clark Dietz's relevant lift station and force main project experience. This list represents just a portion of our overall portfolio—our team has successfully delivered many more similar projects across our service areas. Our work in this space spans decades and includes a range of project types and complexities, often for repeat municipal and utility clients who continue to trust us with their critical infrastructure needs.

Decatur - Brush College Lift Station	Danville - Lynch Creek Lift Station
Danville - Ellsworth Park Lift Station Study	Urbana - Leachate Lift Station Evaluation
St. Joseph - Wastewater Treatment Plant Influent Lift Station	Sanitary District of Decatur - Hickory Point Lift Station
Danville - Ellsworth Park Lift Station Design and Construction	Bloomington - Lift Station Arc Flash Analysis
Normal - Lift Station Plan Review	Danville - Eastgate Lift Station
Decatur - Reas Bridge Lift Station and Forcemain	USML - Lift Station Study and Design
Danville - Poland Road Forcemain Study	Elmhurst - Eldridge Lift Station Design
Elmhurst - McKinley Pump Station Rehabilitation	Sanitary District of Decatur - Lake Shore Dr. Lift Station Replacement
Joliet - Westside Influent Lift Station, Phase III	West Chicago - Lift Station 1 and 4 Evaluation
West Chicago - Lift Station 3 Evaluation	Danville - Northwest Lift Station Replacement
Tuscola - Lift Station Improvements	Danville - Shorewood Lift Station Design
Joliet - St. Jude Lift Station Replacement Design	Elmhurst - Utley Pump Station Rehabilitation
Joliet - Richard Street Lift Station	Sanitary District of Decatur - Lift Station Design and Construction
West Chicago - Lift Station No 3 Design	Joliet - Westside Influent Lift Station Improvements, Phase I
Lake County - Sanitary Force Main Replacement Design	New Albany - Robert E. Lee Lift Station and Force Main Design
Joliet - Westside Lift Station Construction	Sanitary District of Decatur - Lost Bridge Force Main
West Chicago - Lift Station Automation (SCADA)	Franklin Park - Copenhagen Pump Station

RELEVANT PROJECT EXPERIENCE AND EXPERTISE

Franklin Park - Scott Street Lift Station Drainage Basin	West Chicago - Lift Station SCADA Study and Design
UCSD - Lift Station Arc Flash	Danville SD - SCADA System Upgrade
RRWRD/Four Rivers - Pump Station Study	RRWRD/Four Rivers - CMOM Report
Mattoon - Collection & Treatment Study	Fox Lake - Eagle Point Lift Station Improvements
Fox Lake - Menard's Lift Station - Electrical Evaluation	Fox Lake - Main Lift Station Improvements Design
Fox Lake - Hill Top Lift Station Improvements	Fox Lake - Kings Island Lift Stations Improvements
Fox Lake - Seawitch Lift Station Rehabilitation	Fox Lake - Dubells Lift Station Design and Construction
Mattoon - Primary Pump Replacement 1	Joliet - West WWTP Influent Lift Station Ph II
Elmhurst - Atrium Lift Station Design and Construction	Elmhurst - Atrium Grinder Station Design and Construction
Normal - Mercy Creek Lift Station	Fox Lake - Washington Lift Station
Fox Lake - Juras Lift Station Replacement	Fox Lake - Cora Lift Station Replacement
Fox Lake - Aquarium Lift Station Design	Normal - Vernon Ave. Pump Station
Fox Lake - Tweed Lift Station Rehabilitation	Fox Lake - Glenview Lift Station Rehab
Bloomington - Regency Pump Station Rehabilitation	Joliet - St. Jude Lift Station
Joliet - Black Road Lift Station and Force Main Design and Construction	New Berlin - Westridge Lift Station Construction
Lawrence - Fort Harrison Lift Station and Sewer Design	Kittle - Monon Crossing Lift Station Design
New Albany - Robert E. Lee Lift Station and Force Main Design	Noblesville - Lift Station 20 Master Plan
Fishers - Regional Lift Station Evaluation	New Albany - OVR Regional Lift Station and Force Main Design
Fishers - Hague and Allisonville Road Lift Station Upgrades	Antioch - Hennings Court Lift Station
New Albany - Regional Lift Station Capacity Study	Alexandria - SR 9 Lift Station Design/Inspection
New Albany - Basin 14 Lift Station Upgrade RPR	Fishers - Hague Allison Lift Station Evaluation
Seymour - 4th St Lift Station Evaluation	New Albany - Grant Line Lift Station Design
Indianapolis - SSO 105/124 Elimination and Lift Station Improvements	Fishers - Smock Creek Lift Station EQ Basin Analysis, Phase I & II
Indianapolis - Lift Station 402 Improvements	New Albany - Mt. Tabor Lift Station Upgrade
Mt. Vernon - B&M Plastics Lift Station Analysis	New Albany - Old Ford Lift Station Upgrade
Indianapolis - Lift Station 412 Upgrades	Indianapolis - Buck Creek Lift Station 313 Electrical Upgrade
Valley View - Lift Station Plan Review	New Albany - McLean Lift Station Basis of Design Report
Ft. Wayne - Rothman Lift Station & Evard Relief Sewer	New Albany - Old Fork Lift Station Upgrade
Fishers - Winding Creek/Smock Creek Lift Station Improvements	Indianapolis - Belmont North Relief Interceptor - Section 4, 38 MGD Lift Station, Standpipe & Odor Control
Indianapolis - Lift Station 504 Evaluation	Indianapolis - Evanston Ave. Lift Station (LS 504) Evaluation
Indianapolis - Elect Upgrade Lift Station	Prairie Path -Lift Station B Replacement
New Berlin - Kelly Pointe Lift Station Bypass Rehabilitation	Wausau - Industrial Park Lift Station Upgrades and Forcemain Cleaning
River Hills - Manor Lane Lift Station	Wausau - Industrial Park Lift Station Construction
New Berlin - Lift Station Enclosures	Wausau - Industrial Park Lift Station Pump Addition
Whitefish Bay - 2016 Sanitary Sewer and Lift Station	New Berlin - Westridge Lift Station Rehabilitation Design
Kronenwetter - CMOM Report	Weston - Apache Lane/Ryan Street Lift Stations Design
Weston - Apache & Ryan Lift Stations Construction Services	Racine - Lift Station #2 Forcemain Replacement
Wausau - Wausau Waterworks Lift Station Evaluation	Waukesha - Pebble Valley Pump Station
Wausau - Cleveland Avenue Lift Station Design & Construction	Weston - Sanitary Sewer Master Plan Update
Wausau - 72nd Ave Lift Station Design & Construction	Milwaukee - Lift Station SCADA Procurement
Wausau - Cherry Street Lift Station	New Berlin - Lift Station Cranes
Waukesha - Ruben Drive Interceptor Pump	Prairie Path - Roselawn Lift Station & Screen Enclosure

QUALIFICATIONS OF INDIVIDUALS ASSIGNED

ORGANIZATIONAL CHART

The organizational chart below outlines the Clark Dietz project team structure for the Village of Plover Wastewater Utility River Road Lift Station Upgrade project. The project team is led by **Diane Thoune, PE,** Project Manager, who brings extensive experience in the planning and design of a wide range of water and wastewater projects. Diane works closely with clients to identify long-term, efficient solutions—whether the goal is to increase capacity, maintain regulatory compliance, or improve energy efficiency. She manages projects from kickoff through construction, with expertise in lift stations, treatment plant upgrades, drinking water booster stations, storage tanks, needs assessments and impact fee studies, system modeling, and facilities planning.

Supporting Diane is **Tom Foley, PE,** QA/QC Engineer, a senior member of Clark Dietz's water design team. Tom brings deep expertise in water and wastewater engineering, including master planning, water modeling, storage improvements, and lift station design. He plays a key role in reviewing and monitoring project details throughout planning, drafting, and design, helping deliver efficient, well-executed solutions. The technical team also includes **Rob Watt, PE,** as the Design Engineer, **Sean Marzano, SE, PE,** Structural Engineer, and **Paul Zouski, PE,** Electrical Engineer. Together, they provide comprehensive coverage across all major disciplines. **Riverside Land Surveying LLC** will provide site survey. Clark Dietz has partnered with Riverside on many projects throughout central Wisconsin. In addition, **AET** brings specialized expertise in geotechnical engineering, strengthening the team's ability to deliver resilient and cost-effective solutions from the ground up.

This combination of strong project management, design expertise, and quality oversight creates a well-rounded team equipped to deliver reliable, cost-effective infrastructure solutions. Clark Dietz has a history of successful collaboration with our clients, and our approach emphasizes clear communication and responsive support from design through construction completion.



TEAM RESUMES



DIANE THOUNE, PE
PROJECT MANAGER
CLARK DIETZ

Diane has experience in the design of a wide variety of water and wastewater projects. She understands that real solutions come from understanding the client's needs. As a senior level design engineer, Diane is responsible for taking her projects from kickoff through construction completion. She is extremely adept at designing and managing lift stations, collection system studies, treatment plant upgrades, drinking water booster stations, water storage tanks, needs assessment/impact fee studies, system models, and facilities plans. Diane stays involved throughout project construction to ensure a quality project delivery start to finish.

Relevant experience includes:

- Pebble Valley Pump Station Evaluation and Upgrade, Waukesha, WI
- 2022 Sanitary Lift Stations Rehab/ Replacement, Wausau, WI
- Westridge Lift Station Rehabilitation, New Berlin, WI
- 72nd Avenue Lift Station, Wausau, WI
- Ruben Drive Pump Station Replacement, Waukesha, WI
- Industrial Park Lift Station Pump Addition, Wausau, WI
- Industrial Park Force Main Rehabilitation, Wausau, WI
- Trotzer Lane and Ryan Street Lift Stations, Weston, WI
- Plant Hydraulic Model and Pump Efficiency Study, Four Rivers Sanitation Authority
- Kelly Pointe Lift Station Replacement, New Berlin, WI
- Jacobs Ridge Lift Station, New Berlin, WI

EXPERIENCE
27 years

EDUCATION
BS, Environmental Engineering, Michigan Technological University

REGISTRATIONS
Wisconsin Professional Engineer #36713-6

Illinois Professional Engineer #062.064545

Wisconsin Certified Municipal Water and Wastewater Operator #33369

PROFESSIONAL AFFILIATIONS
Wisconsin Wastewater Operators Association

National Engineering Honor Society Alumnus

Tri-County Waterworks Association

American Public Works Association - Wisconsin Chapter



TOM FOLEY, PE
QA/QC ENGINEER
CLARK DIETZ

As an environmental engineer, Tom specializes in wastewater engineering, including planning, design and construction engineering of wastewater collection and treatment. In addition, Tom has project experience in potable water treatment and distribution, stormwater and drainage, sanitary sewer systems, lift stations, and pump system modeling.

Tom is an integral part of Clark Dietz's wastewater and water design team. Specializing in wastewater engineering, he monitors every detail throughout the planning, drafting, and design processes to produce efficient, well executed designs. As a senior level project manager and design engineer, Tom is responsible for taking his projects from planning through construction completion.

Relevant experience includes:

- Pebble Valley Pump Station Evaluation and Upgrade, Waukesha, WI
- 2022 Sanitary Lift Stations Rehab Replacement, Wausau, WI
- Industrial Park Lift Station Construction, Wausau, WI
- McKinley Stormwater Pump Station, Elmhurst, IL
- Utley Stormwater Pump Station, Elmhurst, IL
- Curtis Street Pump Station Rehab, Franklin Park, IL
- Lake Shore Drive Pump Station, Decatur Sanitary District
- 2013 SRF - Pump House Upgrade, Harwood Heights, IL
- Lift Station Replacement/Westside Planning, Wausau, WI
- Lift Station Enclosures, New Berlin, WI

EXPERIENCE
16 years

EDUCATION
MS and BS, Environmental Engineering and Science, University of Illinois at Urbana-Champaign

REGISTRATIONS
Wisconsin Professional Engineer #44430-6

Illinois Professional Engineer #062.065814

PROFESSIONAL AFFILIATIONS
Wisconsin Wastewater Operators Association

American Water Works Association

Central States Water Environment Association

TEAM RESUMES



ROB WATT, PE
DESIGN ENGINEER
CLARK DIETZ

Rob is an experienced project engineer specializing in municipal roadway and utility design, as well as construction observation, including overseeing multi-million-dollar wastewater treatment plant upgrades. He has collaborated with local communities and the State of Wisconsin, contributing to a wide range of infrastructure projects. His work experience includes local, state, and federal permitting; life-cycle cost analysis; storm sewer and stormwater management design; erosion control implementation; traffic control planning; quantity takeoff and cost estimating; and the development of bid and contract documents. His portfolio spans county and state projects, ranging from small road reconstruction initiatives to multi-use trails and utility replacement projects.

Relevant experience includes:

- 2022 Sanitary Lift Stations Rehab/ Replacement, Wausau, WI
- Cherry Street Lift Station, Wausau, WI
- 2025 LSL Third Party Inspection, Wausau, WI
- East Shore Lift Station, Random Lake, WI
- Jacobs Ridge Lift Station, New Berlin, WI
- Regal Manor Force Main Realignment, New Berlin, WI
- Westward Manor Sewer Lining, New Berlin, WI
- WWTP Design, Random Lake, WI
- E. Jelinek Reconstruction and Utility Improvements, Weston, WI
- Jelinek-Machmueller to Alderson Construction, Weston, WI
- Ruben Drive Pump Station Replacement, Waukesha, WI
- Crocker Street Lift Station Replacement, Wausau, WI

EXPERIENCE
7 years

EDUCATION
BS, Environmental Engineering, Michigan Technological University

REGISTRATIONS
Wisconsin Professional Engineer #101100 - 6

PROFESSIONAL AFFILIATIONS
American Public Works Association - Wisconsin Chapter



SEAN MARZANO, SE, PE
STRUCTURAL ENGINEER
CLARK DIETZ

As a senior structural engineer, Sean has conducted hands-on inspections of over thirty steel and concrete water tank and vault structures. These include cylindrical steel water tanks, various sizes of concrete storage tanks, elevated slabs, large diameter brick and concrete sewers, and underground building and utility vaults, among other unique structures. The repairs have involved concrete and reinforcement repairs, structural steel replacement and strengthening, as well as the use of fiberglass reinforcement to enhance and protect existing concrete structures.

Sean's experience includes on-site resident engineering, structural inspections, rehabilitation of existing facilities, peer review and design of new structures for private, local and state entities. Design experience includes steel, aluminum, cast-in-place concrete, pre- and post-stressed concrete, masonry, fiber reinforced plastics and wood structures. Specific structures include parking garages, university buildings, hospitals, retaining walls, steel and concrete multi-span bridges, concrete tanks and equipment frames.

Relevant experience includes:

- Pebble Valley Pump Station Evaluation and Upgrade, Waukesha, WI
- 2022 Sanitary Lift Stations Rehab/ Replacement, Wausau, WI
- Westridge Lift Station Rehabilitation, New Berlin, WI
- 72nd Avenue Lift Station, Wausau, WI
- Ruben Drive Pump Station Replacement, Waukesha, WI
- Jacobs Ridge Lift Station, New Berlin, WI

EXPERIENCE
29 years

EDUCATION
MS and BS, Civil Engineering, University of Illinois at Urbana-Champaign

REGISTRATIONS
Wisconsin Professional Engineer #39562-006

Illinois Structural Engineer #081.006321

PROFESSIONAL AFFILIATIONS
American Council of Engineering Companies, IDOT Bridge Liaison Committee

American Institute of Steel Construction

American Society of Civil Engineers

TEAM RESUMES



PAUL ZOUSKI, PE
ELECTRICAL ENGINEER
CLARK DIETZ

Paul is an experienced project engineer and master electrician specializing in electrical design, cost estimating, and arc flash analysis for educational, corporate, governmental, and industrial facilities. Paul's areas of expertise include low voltage power distribution, medium voltage power distribution, fault current analysis, overcurrent protective device coordination, and arc flash studies, emergency power, uninterruptible power, lighting, grounding, data cabling, security, public address, and fire alarm systems. His training and experience as a master electrician and commercial electrical inspector lends insight to economical, constructible, and maintenance-friendly designs.

Relevant experience includes:

- Pebble Valley Pump Station Evaluation and Upgrade, Waukesha, WI
- 2022 Sanitary Lift Stations Rehab/ Replacement, Wausau, WI
- Westridge Lift Station Rehabilitation, New Berlin, WI
- 72nd Avenue Lift Station, Wausau, WI
- Lift Station Enclosures, New Berlin, WI
- Industrial Park LS Pump Addition, Wausau, WI
- Industrial Park Lift Station Upgrades and Forcemain Cleaning, Wausau, WI
- McKinley Stormwater Pump Station Rehabilitation, Elmhurst, IL
- 2016 Sewer Design, Whitefish Bay, WI
- Electrical Sewage Pump Upgrade, Two Rivers, WI
- Ruben Drive Pump Station Replacement, Waukesha, WI
- Jacobs Ridge Lift Station, New Berlin, WI

EXPERIENCE
23 years

EDUCATION
BS, Electrical Engineering, University of Wisconsin - Platteville

REGISTRATIONS
Wisconsin Professional Engineer #42301-6

Commercial Electrical Inspector #1068205

Master Electrician #1068205

RIVERSIDE LAND SURVEYING LLC
5310 WILLOW STREET, WESTON, WI 54476 OFFICE - 715-241-7500
email - mail@riversidelandsurveying.com

SERVICE: LAND SURVEYOR

We provide land surveying, land planning, flood plain surveys, boundary surveys, construction staking, certified land surveys, boundary line resolution, residential surveying and commercial surveying.

Our vision was to create a unique firm in which clients benefit from technical expertise and long-term value—and business referral sources are well served through our unwavering commitment to the success of their businesses.

The Partners of Riverside Land Surveying LLC, guided by a strong work ethic, established this firm with a clear foundation: values, purpose, and competency. We strive to be a trusted advisor to our clients in a variety of practice areas that includes public infrastructure, land planning, boundary resolution, and residential and commercial development. We bring a comprehensive understanding of our client's goals to the table along with unsurpassed quality of service.

AET

SERVICE: GEOTECHNICAL ENGINEER

We focus on providing accurate and meaningful data, individualized solutions that help clients meet their project objectives, and thoughtful recommendations that steer clients in the right direction for project success.

AET employees also work as One Team toward eliminating work-related injuries and accidents and responding quickly to minimize exposure to health hazards. Whether we're working in the field, in our labs, or from our desks, we follow and enforce safe operating procedures and we encourage our employees to "always engage and think" about safety as they go about their day.

Our in-house quality assurance/quality control (QA/QC) program was established in 1993 to guide staff during technical work and systematically and rigorously audit departments, offices, labs, test procedures and calibrations, and test accuracy.

PROJECT UNDERSTANDING, SCOPE, AND SCHEDULE

PROJECT UNDERSTANDING

The Village of Plover is seeking design, bidding, and construction services for the upgrade of the River Road Lift Station. Located at the northeast corner of the intersection of River Drive and Okray Avenue, River Road is a dry pit pump station with a separate wet well and an above-ground electrical/control panel. The electrical system was updated in 2005, and the variable frequency drives (VFDs) and control panel have been updated more recently.

Diane Thoune met with Logan Elsholtz from the Wastewater Utility at the site on February 11th. Logan stated that the station does not have operational issues; the accessibility and safety concerns associated with all mechanical equipment being located underground are the main drivers for this project. He also said that pump run times are consistent and it's believed that the wet well is in good condition. Infiltration and inflow are not a problem at the station. Village staff can respond quickly to outages at the station, so an onsite generator is not necessary.

The project scope includes complete design engineering for a new submersible pumping station on the existing site. It will include the pumps, piping, force main connection, above-ground enclosure, electrical and controls upgrades, site restoration, and all associated components. The existing wet well will remain and will be modified for the submersible pumps. The updated electrical and control components will be installed in the existing panel.

KEY PROJECT ELEMENTS

- Installation of new submersible pumps in the existing wet well.
- An above-ground enclosure that will house the piping and valves.
- Control panel upgrades, including new VFDs, PLC, and uninterruptible power supply.
- Integration with the Village's existing telecommunications network.
- Electric upgrades between the new pumps and panel components.
- Connection of the new station to the existing force main.
- Phased construction of the new station while maintaining operation of the existing station.

KEY SUCCESS FACTORS

- Station Sizing: Work with Village staff to develop a thorough understanding of the station's current flow rates, evaluate future flow rates, and calculate appropriate sizing of the station components.
- Design Standardization: Adhere to the design standards utilized on other recent lift station upgrades and incorporate proven solutions to ensure consistency with other stations in the system.
- Seamless SCADA Integration: Ensure proper integration with the Village's existing SCADA system, consistent with Plover's standard layouts and equipment requirements.
- Minimized Service Disruption: Develop a proposed construction sequence and bypass pumping plan to maintain service during the reconstruction process.

PROJECT APPROACH

Clark Dietz will complete the River Road Lift Station Upgrade project according to the four main tasks described below.

Task 1: Pre-Design Phase

- **Kickoff Meeting and Site Visit.** We will conduct a kickoff meeting with Village staff to review project goals, confirm data needs, establish communication protocols, and conduct a field review of the lift station site and equipment.
- **Survey.** Our survey subcontractor, Riverside Land Surveying, will perform a detailed topographic survey of the existing lift station site and adjacent rights-of-way as described in the RFP. Documentation will include existing conditions such as utilities, structures, and elevations critical for design.
- **Geotechnical Investigation.** Clark Dietz will coordinate with our geotechnical subconsultant, AET, for completion of an engineering report that details site groundwater levels, soil bearing capacities, and other geotechnical parameters necessary for design. As requested in the RFP, two borings will be completed.
- **Document Request and Review.** We will request information related to the station that will be used in our design, including record drawings for the station and nearby utilities, pump curves and runtime data, electrical data, and property information.

- **Utility Investigation.** We will coordinate with utility companies to identify potential conflicts.
- **Flow Verification.** We will analyze the available pump data and review information regarding potential development in the service area as provided by the Village to verify flow rates and develop appropriate design criteria for the new pumps. We will prepare preliminary hydraulic design calculations and develop a hydraulic profile through the station and force main. These calculations will establish the basis of design.
- **Conceptual Site Plan.** We will identify site restrictions and develop a conceptual site layout that maximizes ease of maintenance for Village staff.

Preliminary engineering will establish key design parameters including service area flows and pump sizing. Prior to proceeding with detailed design, Clark Dietz will meet with Village staff to discuss our analysis, assumptions, and recommendations. The Village's comments will then be incorporated into the station design.

Task 2: Design Engineering

Approximately 30% design engineering plans will be prepared based on the information gathered in Task 1. As part of this phase we will develop system curves, coordinate with approved equipment manufacturers, develop preliminary engineering calculations, and begin coordination with WPS for the electric service.

- **30% Design Documents will include:**
    - Demolition plan
    - Site layout showing the proposed enclosure location
    - Enclosure piping plan
    - Wet well modifications
    - Section view of the piping enclosure and wet well
    - Site grading and utilities plan
    - Pump options based on service area flow calculations
    - Preliminary opinion of probable construction cost (OPCC) based on the preliminary plans

The 30% documents will be submitted to Village staff for review. Clark Dietz will then conduct a review meeting with staff to go over the Village's questions and comments. We will prepare meeting minutes for distribution to all attendees. Clark Dietz will then proceed with preparing the 60% design documents, incorporating the Village's comments from the meeting. These plans will refine the preliminary layout drawings submitted at the 30% stage.

- **60% Design Documents will include:**
    - Updated site plans based on Village feedback
    - Detailed plan and section designs for the wet well and enclosure
    - Preliminary electric service location
    - Electrical design, including a draft one-line diagram
    - Draft process & instrumentation diagram (P&ID)
    - SCADA integration details
    - Selections for the major pieces of equipment
    - Erosion control details
    - Preliminary detailed specifications
    - An updated OPCC
    - A proposed bypass and construction phasing plan

These documents will be compiled into a set of reviewable plans and specifications that will be submitted for in-house QA/QC along with the basis of design. The QA/QC review will be conducted by a senior-level engineer who is not involved with the day-to-day project design.

PROGRESS AND REVIEW MEETINGS

We believe that regular communication with the Client is an important part of the project development and design process. In addition to the kickoff meeting at the beginning of the project, we anticipate attending meetings after each deliverable. We will come to these meetings prepared with an agenda, options specific to the project, questions, and recommendations. Each meeting will be documented in meeting minutes highlighting decisions and action items.



We will hold another review meeting with Village staff after their review of the 60% design documents. After receiving their comments, we will begin the final design and permitting process. We'll provide design submittals at the 90% and 100% levels:

- **90% Design**
  - Complete drawings
  - Complete technical specifications
  - Complete EJCDC front-end contract documents
  - Final site layout, structural details, and electrical systems
  - SCADA integration details and PLC programming requirements
  - Final erosion control details
  - Updated construction cost estimate
  - 90% design review meeting
- **Permitting**
  - WDNR municipal sewage lift station permit application preparation
  - Utility company coordination for electric service

Note: The disturbed area of the lift station construction project will be less than one acre, so submittal of an NOI to the WDNR will not be necessary. Also, no wetland disturbance is anticipated during construction.

- **Final Design**
  - Incorporation of Village staff's comments from 90% design review meeting
  - Incorporation of WDNR comments
  - Final bid-ready documents, submitted to the Village in Adobe Acrobat PDF format
  - Engineer's final OPCC

Task 3: Bidding Assistance

Clark Dietz will assist the Village with advertising the lift station project and obtaining the bid for a single prime construction contract.

- **Document Distribution.** We will provide the final Bidding Documents in electronic format and manage distribution of and payment for plan sets and bid documents electronically through our online plan holder service (Quest CDN). The list of plan holders will also be maintained electronically.
- **Official Notice.** Clark Dietz will prepare an Official Notice using legal advertisement language and submit the notice to the Village, who will submit it to their official news publication.
- **Pre-Bid Meeting.** We will attend and conduct a pre-bid meeting to inform contractors about the project.
- **Contractor Identification.** We will review the contractors holding the bidding documents and identify appropriate contractors to complete the lift station construction.
- **Bidder Inquiries.** We will provide clarification for bidder questions.
- **Addenda.** We will prepare necessary addenda to clarify or modify bid documents.
- **Bid Opening.** Clark Dietz will conduct a virtual bid opening through Quest CDN.
- **Bid Tabulation.** We will prepare and submit a bid tabulation to the Village.
- **Bid Recommendation.** We will review the bids and issue a letter of recommendation for award.
- **Notice of Award.** We will prepare the Notice of Award to be sent to the successful contractor.

> "WE HIRED CLARK DIETZ ENGINEERING SERVICES TO ASSIST ON SEVERAL OF THE NEW BERLIN UTILITY PROJECTS IN THE CITY. DIANE [THOUNE] HAS SHOWN EXEMPLARY PROFESSIONALISM IN EACH OF THE PROJECTS CLARK DIETZ MANAGED."
>
> Jim Hart, Former Utility Manager
> City of New Berlin, WI

Task 4: Construction/Post-Construction Engineering

We understand that Village staff will provide full-time construction observation for the lift station upgrade. Clark Dietz will assist with the construction services described below.

- **Contract Documents.** Clark Dietz will prepare Conformed to Contract (CTC) documents including changes made through addenda and the successful contractor's information.
- **Contract Execution.** Clark Dietz will assist the Village to execute the construction contract after receipt of the executed agreement, bonds, and proof of insurance from the contractor.
- **Notices to Contractor.** Clark Dietz will assist in preparing the Notice to Proceed.
- **Pre-Construction Meeting.** Clark Dietz will coordinate and conduct a pre-construction conference between the contractor and Village staff. We will prepare and distribute a sign-in sheet, meeting agenda, and minutes from the meeting.
- **Requests for Information.** We will answer technical questions that arise during construction.
- **Change Orders.** We will review change order requests to assess their need. If a change order is warranted, we will provide documentation for the change order and then forward the request to Village staff for review and approval.
- **Submittal Review.** We will review contractor submittals, shop drawings, test results, and O&M manuals to ensure compliance with the contract documents.
- **Site Visits.** Clark Dietz staff will provide site visits during construction to observe progress and check for consistency with the bid documents. Two visits from each of our engineers (civil, structural, electrical, and controls) are included in our scope of work, as requested in the RFP.
- **Startup and Closeout.** Clark Dietz will assist with station startup, perform a final inspection after the work is completed, and prepare a punch-list. Our scope of work includes five site visits during this phase.
- **Record Drawings.** Clark Dietz will provide a set of reproducible record drawings in electronic format that incorporate the changes made during construction.

Quality Assurance Plan

Our quality management approach ensures that design quality is maintained throughout the project:

- **Internal Project Controls.** We will hold an internal project kickoff meeting to establish roles, responsibilities, and quality control procedures.
- **Design Reviews.** All work products will undergo internal technical review by senior staff not directly involved in production.
- **Subconsultant Coordination.** Regular communication with our subconsultants will ensure coordinated deliverables and adherence to schedule.
- **Constructability Reviews.** We will perform constructability reviews at each design milestone to identify potential issues before construction.
- **Client Coordination.** Progress meetings with Village staff will ensure the design meets expectations and incorporates feedback throughout the process.

Through this approach, we will deliver a lift station design that addresses the key success factors: thoughtful station sizing, adherence to the Village's design standards, a seamless controls upgrade, and minimized service disruption during construction.

PROJECT UNDERSTANDING, SCOPE, AND SCHEDULE



ABILITY TO MEET THE SCHEDULE

Clark Dietz is dedicated to meet the City's anticipated schedule. Below, please find our tentative project schedule:

TASK	DATE
Proposals Returned	February 27, 2026
Estimated Contract Award	March 2026
Project Kick-off Meeting	April 2026
Preliminary Engineering Submittal and Meeting	June 2026
Submittal of 30% Construction Documents and Meeting	July 2026
Submittal of 60% Construction Documents and Meeting	September 2026
Submittal of 90% Construction Documents and Meeting	November 2026
Final Plan Submittal	January 2027
Project Bid	February 2027
Construction Complete	December 2027

FEE PROPOSAL



PROPOSED FEE

Listed below, please find our proposed fee for the Village of Plover River Road Lift Station Upgrade:

TASK	FEE
Pre-Design Phase	$14,900 (INCLUDES $8,000 FOR SURVEY AND GEOTECHNICAL SUBCONSULTANT SERVICES)
Design Phase	$38,100
Bidding Assistance	$4,900
Construction/Post-Construction	$28,600
TOTAL FEE	**$86,500**

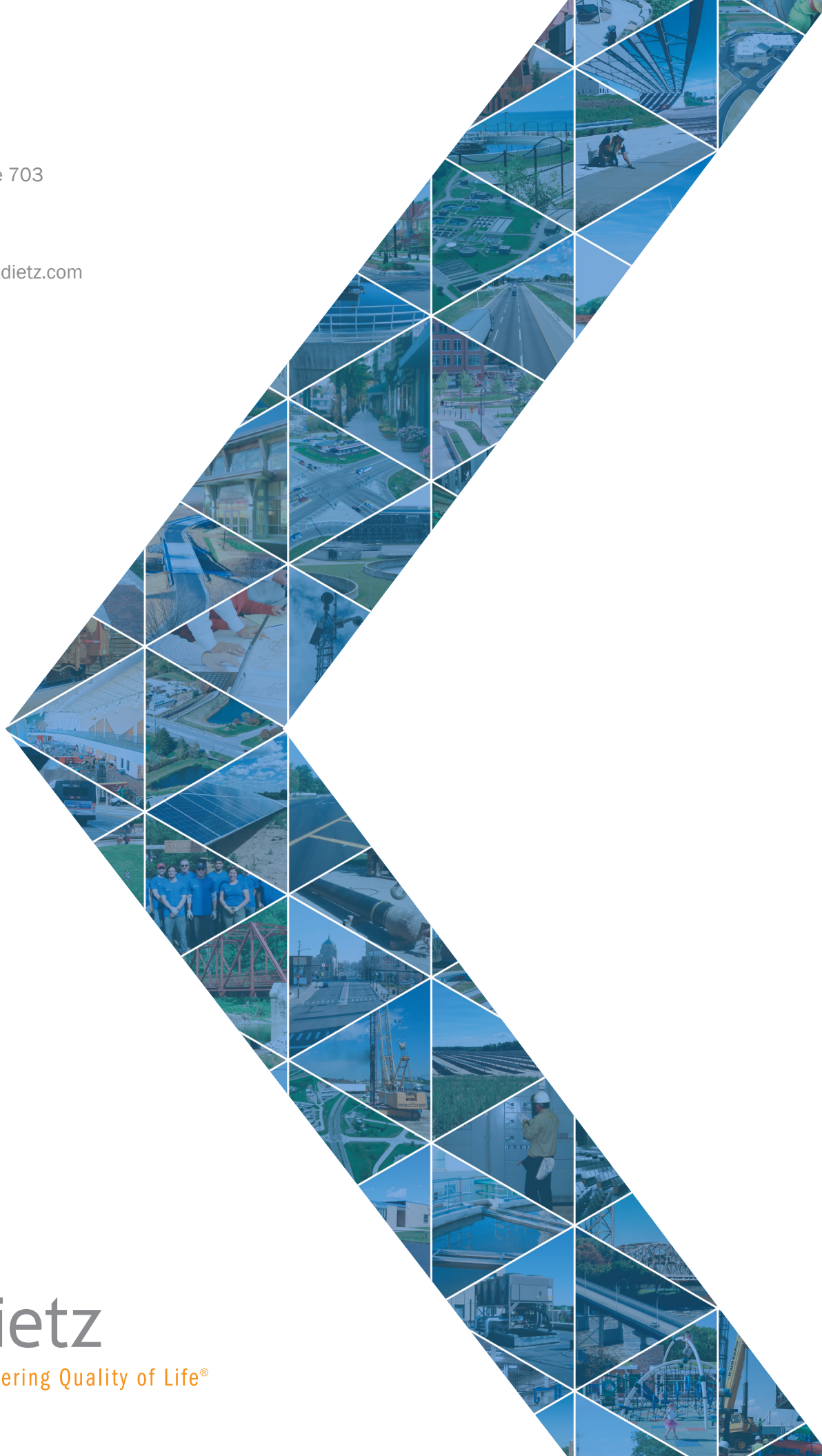
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Connect with us!



Clark Dietz

Engineering Quality of Life®

Village of Plover
2400 Post Road | Plover, WI 54467

Village of Plover Wastewater Treatment Facility Facility Plan Amendment

March 2026

Prepared by:

Donohue & Associates, Inc.
3311 Weeden Creek Road |Sheboygan, WI 53081
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Donohue Project No.: 14597

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APPENDICES

Appendix A – WPDES Permit

Appendix B – Stevens Point Urban Area Sewer Service Planning Area Excerpts

Appendix C – Village of Plover Comprehensive Master Plan Excerpts

Appenidx D – Opinion of Probable Costs

Appendix E – Site Investigation

ABBREVIATIONS

AHI	Architecture and History Inventory
AHU	Air Handling Unit
ARI	Archaeological Report Inventory
ASI	Archaeological Sites Inventory
ATAD	Autothermal Thermophilic Aerobic Digestion
BOD	Biological Oxygen Demand
CMOM	Capacity, Management, Operation, and Maintenance
CMP	Comprehensive Master Plan
CY	Cubic Yards
DOA	Department of Administration
EBPR	Enhanced Biological Phosphorus Removal
EPA	Environmental Protection Agency
GPCD	Gallons per Capita Day
gpm	gallons per minute
mg/L	milligrams per liter
MG	Million Gallons
MGD	Million Gallons per Day
NH3-N	Ammonia
NR	National Register of Historic Places
O&M	Operation and Maintenance
PF	Peaking Factor
ppd	pounds per day
ppdpc	pounds per day per capita
RAS	Return Activated Sludge
scfm	standard cubic feet per minute
SPUASSPA	Stevens Point Urban Area Sewer Service Planning Area
SSA	Sewer Service Area
TKN	Total Kjeldahl Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
UV	Ultraviolet
VPCP	Village of Plover Comprehensive Plan
WAS	Waste Activated Sludge
WDNR	Wisconsin Department of Natural Resources
WEF MOP 8	Wastewater Facilities Manual of Practice 8
WPDES	Wisconsin Pollutant Discharge Elimination System
WWTF	Wastewater Treatment Facility

1. INTRODUCTION

1.1 PURPOSE

The purpose of this facility plan is to evaluate treatment needs over a 20-year planning period for the Village of Plover Wastewater Treatment Facility. This report includes the following:

- Assessment of existing facility condition
- Projection of future flows and loadings
- Evaluation of current unit processes capacity and treatment performance
- Identification of potential future effluent limitations
- Evaluation of upgrade alternatives to meet future treatment needs
- Recommendation of cost-effective upgrades to address identified needs

This report will be prepared as a submittal to Wisconsin Department of Natural Resources (WDNR) for review and approval.

1.2 BACKGROUND

The Village of Plover owns and operates a Wastewater Treatment Facility (WWTF) and collection system, located in Portage County south of the City of Stevens Point. The Village's wastewater treatment facility was originally constructed in 1973 but was re-built at its current site off Coolidge Avenue in 1986 due to area growth. Since the plant's construction at the new site, the Village has completed several other upgrades between 1998 and 2010. The facility receives a combination of municipal, commercial, industrial, and septage holding tank waste from the surrounding area. Major unit processes include fine screening, grit removal, influent pumping, enhanced biological phosphorus removal (EBPR) selectors, aeration tanks, oxidation ditch, secondary clarification, and ultraviolet (UV) disinfection. Biosolids unit processes include waste activated sludge (WAS) holding tanks, gravity belt thickening, auto-heated aerobic digestion, screw press dewatering, and cake storage prior to land application.

A Facility Plan was completed in April 2009 for the Plover WWTF. Based on the conclusions and recommendations from the 2009 Facility Plan, the Village expanded the activated sludge system, constructed a new blower building to house three new blowers for the new aeration system and two new blowers for the digesters, and constructed two new WAS holding tanks. This facility improvements upgrade began late 2009.

On December 18, 2024 the Village of Plover was reissued a Wisconsin Pollutant Discharge Elimination System (WPDES) Permit No. WI-0027995-11-0 by the Wisconsin Department of Natural Resources (WDNR) in accordance with Section 147 of the Wisconsin Statues. The WPDES permit regulates discharge from the Village's wastewater treatment facility into the Wisconsin River. A copy of the WPDES permit is contained in Appendix A. The reissued permit went into effect on January 1, 2025.

2. BACKGROUND INFORMATION AND EXISTING CONDITIONS

2.1 NEED FOR PROPOSED PROJECT

The treatment facility consistently achieves compliance with all water quality permit requirements. However, the service area continues to develop and grow, which increases wastewater flows and loadings. The majority of the facility is between 25 and 40 years old with a significant number of aging equipment systems needing replacement or refurbishment. This facility plan serves as the evaluation of alternatives prepared in accordance with NR110.08-09 for addressing projected wastewater treatment needs for the Village of Plover during the 20-year planning period.

2.2 PLANNING AREA

The Village of Plover is located within the "Stevens Point Urban Area Sewer Service Planning Area" (SPUASSPA). An update to the SPUASSPA plan was completed in August 2023 identifying projected population growth through 2040. The Plover WWTF serves the Village of Plover and adjacent areas within the SSA. The existing Plover SSA is identified in Map 8.3 of the SPUASSPA update. This exhibit is presented in Appendix B.

Areas of residential, commercial, and industrial growth are identified in Map 8.3 of Appendix B. The most significant area of residential growth is anticipated east of Interstate Highway 39 consisting of a mix of single family, multi-family, and mixed residential development. Commercial developments are anticipated to occur primarily southeast of I-39 and include commercial/residential and commercial/industrial developments.

2.3 ENVIRONMENTAL SETTING

The environmental setting within the Sewer Service Area (SSA) was reviewed in the Village of Plover Comprehensive Plan (VPCP) completed in 2025. Chapter 5 of the VPCP is included in Appendix C. The following items were included in the environmental setting review:

- Geology
- Bedrock
- Topography
- Soils
- Groundwater
- Surface water
- Wetlands
- Floodplains
- Wildlife, Bird City, forest land, Tree City USA, forest land management, endangered/threatened species
- Cultural resources

The Plover WWTF discharges to the Wisconsin River within the Fourmile and Fivemile Creeks Watershed within the Upper Wisconsin River Southern Sub-Basin. The Wisconsin River is classified as a warm water sport fish community/non-public water supply within this reach. The environmental setting review from the VPCP results in the following conclusions regarding the Plover SSA:

- Development in the Village is not subject to limitations which would be imposed by floodplain, wetlands, steep slopes, high bedrock, or unbuildable soils.
- There are no known natural environmental conditions which have extraordinary beneficial or adverse effects on the welfare of the Village, with the exception for the ample, good quality groundwater supply.
- The Wisconsin River and Little Plover River corridors constitute the most valuable environmental corridors within the Village. Because these corridors represent a limited supply of special natural lands within the Village, their continued protection from the adverse effects of development is important.
- Development regulations for the protection of natural drainageways may be necessary to protect them and assure compatibility with future development.
- With the development of a public water supply system, the protection of groundwater resources has become a major concern within the Village, in order to protect groundwater within the well recharge areas, the Village began implementation of Wellhead Protection Plan recommendations in 1992 with the adoption of the Wellhead Protection Ordinance. The Village should also consider methods for reducing nitrate contribution to the groundwater supply and advocate land use patterns which minimize contributions of harmful levels of contaminants to the wells' recharge areas.
- The Village of Plover has responsibilities to its Village residents and businesses, which depend on the Village for a safe and adequate supply of water. Providing a safe and adequate supply of water means that the Village must take steps to ensure long-term access to high quality groundwater at a certain quantity. It also means that the Village must be a good steward of this resource because the groundwater supply is not unlimited and how we use this valuable resource affects the environment as well as other users of groundwater.

2.4 DEMOGRAPHIC AND LAND USE INFORMATION

Existing land use within the Village has been well documented in the VPCP. Approximately 7,000 acres exist within the Village. Existing land use is predominantly single family residential (27%) followed by transportation (15%), agricultural (13%), vacant land (9%), industrial (6%), commercial (6%) and institutional/governmental (5%). Figure 8.1 in Appendix C presents the existing land use within the Village as identified in the VPCP.

2.5 CURRENT FLOWS

Five years of operating data (2020 through 2024) from the Plover WWTF were reviewed. The recorded influent characteristics for the five years are summarized in Table 2-1. The estimated current year conditions were calculated to reflect an existing influent condition at the WWTF. The average annual values for flow and loadings were calculated based on the average of the five years of data. Maximum month, maximum week, and peak day values were determined by selecting the respective maximum for each constituent from the five years of review. The existing peaking factors for flow, BOD, TSS, TKN, and TP were also determined from the five years of data and are shown in the last column of Table 2-1.

Table 2-1 Current Flows and Loadings

Characteristic	Units	2020	2021	2022	2023	2024	Current Value	PF
Annual Average Flow	MGD	1.53	1.40	1.45	1.49	1.67	1.51	-
Max Month Flow	MGD	1.77	1.70	1.55	1.61	1.95	1.95	1.3
Max Week Flow	MGD	1.83	1.76	1.59	1.64	2.00	2.00	1.3
Peak Daily Flow	MGD	2.21	1.96	1.69	1.72	2.30	2.30	1.5
Peak Hourly Flow	MGD	2.42	2.51	2.52	2.43	2.73	2.73	1.8
Annual Average BOD	ppd	4,941	4,776	5,315	4,584	4,836	4,890	-
Max Month BOD	ppd	7,021	6,165	7,323	5,656	7,824	7,824	1.6
Max Week BOD	ppd	8,179	7,014	8,210	7,117	7,824	8,210	1.7
Annual Average TSS	ppd	5,493	5,128	5,394	4,886	5,378	5,256	-
Max Month TSS	ppd	8,255	7,530	7,643	7,207	7,491	8,255	1.6
Max Week TSS	ppd	9,050	8,278	9,074	8,242	8,162	9,074	1.7
Average Annual NH3	ppd	295	385	413	508	500	420	-
Max Month NH3	ppd	365	520	564	664	674	674	1.6
Max Week NH3	ppd	467	625	670	784	832	832	2.0
Annual Average TKN	ppd	472	577	631	657	654	598	-
Max Month TKN	ppd	650	849	818	1,092	992	1,092	1.8
Max Week TKN	ppd	1,017	997	1,122	1,207	1,571	1,571	2.6
Annual Average TP	ppd	77	76	81	88	88	82	-
Max Month TP	ppd	104	126	132	141	123	141	1.7
Max Week TP	ppd	118	141	173	181	154	181	2.2

2.6 EXISTING FACILITY CONDITION ASSESSMENT

The existing wastewater treatment facilities consist of the following:

- Collection system
- Preliminary treatment, including a raw wastewater pump station, fine screens, and vortex grit removal
- Secondary treatment, including four unaerated mixing basins, two aeration basins, a three-channel oxidation ditch and final clarifiers
- Ultraviolet Disinfection

Sludge generated from the liquid treatment process is processed through gravity belt thickening prior to aerobic digestion. Following digestion, sludge is dewatered through a belt filter press and stored as cake prior to land application.

2.6.1 SITE FENCING AND ACCESS GATE

The facility currently has a site fence and gate surrounding the treatment processes; however, there is no site access security measures entering the site from Coolidge Avenue. Donohue recommends installing a new actuated entrance gate at the Coolidge Avenue entrance with both a key card reader and PIN pad for allowing access to approved personnel and septage haulers.

2.6.2 SEPTAGE RECEIVING STATION

The current septage receiving station is located near the administration building and has no screening prior to discharge into the interceptor sewer. Donohue recommends the Village plan for constructing a new septage receiving station to address this issue.

Landfill leachate is received at the receiving station southwest of the oxidation ditch. The receiving station includes a 15,000-gallon storage tank. Received leachate enters the storage tank from above through a removable bar screen. Inside the storage tank is a series of spray nozzles that alternate from 60° and 45° from horizontal. Received leachate leaves the storage tank through an 8-inch pipe and air-operated pinch valve that connects to a manhole 8-feet away.

2.6.3 COLLECTION SYSTEM

The collection system consists of ten lift stations, 85 miles of sewer main, and 1,526 manholes that serve an area covering about 9.2 square miles. One lift station consists of a dry well and wet well configuration while the other nine lift stations consist of a single wet well with submersible pumps. Each lift station contains two pumps. Force mains leaving the ten lift stations range from 4 inches to 8 inches in diameter. The force mains discharge either to a gravity interceptor or another intermediate lift station. Lift stations are monitored remotely 24/7 via radio telemetry receiving status and alarm conditions through their SCADA system. The Village maintains and operates the collection system performing a series of maintenance activities for the system including cleaning, inspection, and rehabilitation. The Village maintains a sewer collection systems Capacity, Management, Operation, and Maintenance (CMOM) program, with the latest revision to the program in 2016.

One item that has been identified for improvement is the radio telemetry antenna located near the administration building. This antenna is short and causes issues with communication to a few of the remote sites. This antenna is also located in a potential location for the recommended administration building expansion. Donohue recommends constructing a new taller antenna coordinated with the location of the new administration building addition.

For more information on the collection system, refer to the 2025 Collection System Master Plan prepared by Donohue.

2.6.4 ADMINISTRATON BUILDING

The existing administration building has a vehicle storage garage, two offices, a laboratory, a locker room, bathroom, mechanical room, lunchroom, and parts storage room. This building does not provide enough space for staff and the interior spaces have not been updated in 25 years. Donohue recommends an expansion and renovation of this building to support staff needs.

2.6.5 PRELIMINARY TREATMENT AND INFLUENT PUMPING

Influent wastewater enters the preliminary treatment building where it passes through a fine screen, a vortex grit removal system, and a Parshall flume prior to the influent wetwell. The fine screen has 1/4 inch openings and collects and discharges screenings to a washer/compactor unit. Screenings from the washer/compactor are stored in a dumpster and landfill disposed. The fine screen system is approximately 20 years old and has a peak capacity of 4.5 MGD. The screening equipment is past its useful life; therefore, Donohue recommends screen equipment replacement.

The vortex grit removal system consists of the vortex chamber, grit pump, grit concentrator, and grit dewatering screw conveyor. Grit from the dewatering screw conveyor is deposited in a dumpster and landfill disposed. The grit removal system and Parshall flume each have a peak capacity of 4.5 MGD. The degritter mechanism and grit pump are approximately 25 years old and are at the end of their anticipated operational life. The grit concentrator and dewatering screw conveyor are approximately 10 years old. Donohue recommends replacement of the degritter mechanism and grit pump.

Wastewater is pumped out of the influent wetwell by a combination of five submersible constant speed wastewater pumps. Two pumps have capacities of 670 gpm and three pumps have capacities of 1,175 gpm. The total firm influent pumping capacity of 5.3 MGD. The influent pumping system is approximately 25 years old and the pumps are at the end of their operational life. Donohue recommends replacement of the influent pumping system. In order to simplify operation of the pumping system, Donohue recommends all five pumps be replaced with the 1,175 gpm size. This will require some piping upgrades at the two locations that currently have smaller pumps.

A few miscellaneous upgrades were identified during the condition assessment. The slide gates in the screening and grit removal channels are severely corroded and difficult to operate. Donohue recommends replacement of these seven gates. The influent pump access hatches are also severely corroded and recommended for replacement. Lastly, the building roof is original and recommended for replacement.

2.6.6 SECONDARY TREATMENT

Following preliminary treatment, wastewater is pumped to a conventional rectangular activated sludge system that was added in 2009. This system has two trains, each train is made up of mixing basins, an aeration basin, and a WAS holding tank. In total there are four mixing basins, two per train. Each mixing basin has a volume of 100,000 gallons. The gates used to switch flow path through the mixing basins during maintenance and cleaning are manual lift gates that are too large and heavy to lift and lower safely. Donohue recommends replacing these gates with manually actuated gates. New gates would allow staff to turn a hand crank to lift and lower the gates safely.

Wastewater flows from the mixing basins to the aeration basin. There are two total aeration basins, one per train. Each aeration basin has a volume of 310,000 gallons. A new blower building was also constructed during this time to provide the aeration necessary for the new basins. Staff has difficulty balancing and controlling the aeration to the aeration basins efficiently. Donohue recommends modifying the aeration piping on the aeration basins to incorporate new electrically actuated valves and airflow meters to automatically control the balancing and airflow to the basins based on dissolved oxygen monitoring in the tanks.

After the aeration basins wastewater flows to the oxidation ditch activated sludge system. The oxidation ditch consists of three concentric channels with a total volume of 2.95 MG. The outer channel makes up half the total volume. The middle channel makes up 35 percent of the total volume. The inner channel makes up 15 percent of the total volume. Mixed liquor travels around the outer, middle, and inner circular channels prior to discharging to the secondary clarifiers. Six mechanical aerators provide mixing and transfer of oxygen into the mixed liquor. There are four aerator shafts on the outer channel and two each on the middle and inner channels. The combination of rectangular tanks and oxidation ditch is operated as an extended aeration activated sludge system with the mixing basins providing the means for Enhanced Biological Phosphorus Removal (EBPR).

The oxidation ditch was originally constructed and placed into operation in 1987. Upgrades were completed on the aerators in 1998. This equipment is now more than 25 years old and in need of equipment replacement. The inner aerator bearings and drives are also difficult to access for maintenance. Donohue recommends full equipment replacement along with installation of a gantry system for maintenance of the inner bearings and drives. Note the aerator shafts will likely be reusable when this equipment is replaced since they are stainless steel.

Two 55-foot diameter final clarifiers with a total surface area of 4,750 square feet provide clarification of final effluent and thickening of return and waste activated sludge. The clarifiers were originally constructed and placed into operation in 1987. In 2007 the clarifiers were refurbished with new drives, feed wells, Stamford baffles, and suction headers. The mechanisms, center columns, access bridges, weirs, scum baffles, and control panels were reused. This equipment is now more than 35 years old and in need of equipment replacement. Donohue recommends full equipment replacement along with re-coating of the fiberglass dome covers and replacement of the cover doors and louvers. Donohue also recommends replacement of the two 24-inch buried plug valves on the mixed liquor piping to Clarifier 2 that are currently inoperable.

Return activated sludge (RAS) is pumped form the bottom of the clarifiers to the mixing basins in the aeration tanks using three dry pit centrifugal non-clog pumps. One pump is dedicated to each of the two final clarifiers and a third is a backup. The pumps have a peak pumping capacity of approximately 450 gpm each and include variable speed drives for control of the return flow to the oxidation ditch.

Scum from the final clarifiers is collected in a scum well and pumped to the aerobic digesters using a positive displacement rotary lobe pump. The pump was replaced in 2025.

2.6.7 DISINFECTION

Effluent from the secondary clarifiers is discharged to the UV disinfection channel prior to discharge to the Wisconsin River. The Village's WPDES permit requires effluent disinfection from May 1 through September 30. The UV disinfection system was constructed and placed into operation in 2004 and is 20 years old. This equipment is past its useful life and inefficient compared to current technology. Donohue recommend replacing the UV disinfection equipment.

2.6.8 FERRIC CHLORIDE CHEMICAL FEED

Ferric chloride can be dosed at several locations in the facility including the mixed liquor flow stream at the clarifier splitter box, the screw press feed sludge, and the screw press filtrate flow. The pumping equipment and piping located in the Solids Handling Building are in poor condition and recommended for replacement. The storage tank appears to be in good condition; however, Donohue recommends a tank inspection to further evaluate the tank and determine if any refurbishment is required. The level monitoring equipment for the ferric storage tank is recommended for replacement. Also, there is other piping located in the ferric chloride feed room that is corroded and recommended for replacement including plumbing piping and sludge feed piping.

2.6.9 WAS THICKENING AND AEROBIC DIGESTION

Waste activated sludge (WAS) is diverted from the RAS pumping system to the WAS holding tank where it is stored until the gravity belt thickener system is operated to thicken the WAS and feed the aerobic digesters. The gravity belt thickener system consists of a feed pump, polymer feed system, and a 1.5

meter gravity belt thickener. The aerobic digester system consists of a positive displacement transfer pump and four digester tanks with the fourth being utilized as a digested biosolids storage tank where digested biosolids are held prior to dewatering using the screw press. Aeration for Digesters 1, 2, and 3 is provided by three positive displacement blowers located in the basement of the Aerobic Digester Building and fine pore medium pressure diffuser systems in each of the digesters. Vertical shaft mechanical mixers are installed in Digesters 1, 2, and 3 to provide supplemental mixing. Aeration for the WAS holding tank and Digester 4 is provided by three positive displacement blowers located on the first floor of the Final Clarifier Control Building and coarse bubble diffuser systems in each of the tanks.

The piping and valve equipment for the various sludge pumping systems are approximately 40 years old and are at the end of their anticipated operational life.

The gravity belt thickener system and aerobic digestion system was constructed and placed into operation in 1999. All the equipment included in these systems except for the aeration diffusers have an anticipated operation life of 20 years. The aeration diffusers have an anticipated operational life of 5 to 7 years. The aerobic digesters are approximately 26 years old and the equipment is at the end of its useful life.

Donohue recommends the following upgrades:

- Piping and valve replacement for the RAS, WAS, plant effluent, and sludge transfer pumping systems located in the basement of the Control Building.
- Gravity belt thickener equipment replacement
- Aerobic digester equipment replacement at Structure 80 including the diffuser systems, mixers, and blowers. Note the facility has worked on two of the three mixers and the gear boxes may be useable with future replacement parts.
- Sludge holding tank equipment replacement at Structure 40 including piping, valves, diffuser system, walkway platform, and blowers.
- Aerobic digester and sludge holding tank concrete refurbishment
- Sludge holding tank fiberglass cover re-coating and replacement of the doors and louvers.
- Aerobic Digester Building roof replacement

2.6.10 BIOSOLIDS DEWATERING, STORAGE, AND LAND APPLICATION

Digested biosolids are held in the Sludge Holding Tank (Digester 4) until the screw press system is operated to dewater the biosolids for storage in the on-site biosolids storage building. The screw press system consists of a feed pump, a polymer dosing system, and a screw press. The facility has had several issues with performance of the feed pump. This rotary lobe pump is recommended for replacement with a progressing cavity pump. The screw press equipment is in good condition. The buried screw press sludge feed piping from the Control Building to the Solids Handling Building is recommended for replacement. Also, the Solids Handling Building roof is original and recommended for replacement.

The dewatered cake is transported to the biosolids storage building using two conveyors. These conveyors have been maintenance intensive, and Donohue recommends equipment replacement. A contract hauler transports the cake biosolids from the on-site storage building to the agricultural fields for application.

2.6.11 MAINTENANCE STORAGE BUILDING

The facility currently has two storage buildings that are too small and in need of renovation. Donohue recommends construction of a single larger storage building to suit the facility needs.

2.6.12 SCADA UPGRADES

Parts of the existing SCADA system are beyond their useful life and are recommended for upgrade. Donohue recommends making select upgrades to the facility's SCADA system.

2.6.13 ELECTRICAL DISTRBUTION AND MCCS

The following electrical motor control centers are over 25 years old and in need of replacement:

- Administration Building 10 MCC
- Preliminary Treatment Building 20 MCC
- Solids Handling Building 60 MCC and backup generator
- Aerobic Digester Building 80 MCC

2.6.14 HEATING VENTILATION AND AIR CONDITIONING SYSTEMS

The following buildings at the facility have HVAC systems over 25 years old and are in need of equipment replacement:

- Administration Building 10 HVAC
- Preliminary Treatment Building 20 HVAC
- Control Building 40 HVAC
- Solids Handling Building 60 HVAC (Note this unit is 4 years old and may be able to be relocated)
- Aerobic Digester Building 80 HVAC

Donohue recommends identifying at-grade locations for any replacement air handling units that can be moved from roofs to improve maintenance access and safety. Note that these relocations will add some roof modifications and duct modifications to the buildings.

2.6.15 SUMMARY OF RECOMMENDED CONDITION ASSESSMENT UPGRADES

Table 2-2 presents a summary of recommended facility upgrades based upon the condition assessment conducted in the preceding sections. These upgrades are recommended due primarily to the age and condition of each. The total project cost for these improvements will be included as part of the estimated project cost of the recommended alternative in Appendix D, in addition to the recommended capacity improvements.

Table 2-2 Summary of Recommended Condition Assessment Upgrades

Structure	Recommended Improvement
WWTF Site	• Add a main entrance gate and access controller with key card and PIN pad authorization • Construct a new septage receiving station • Replace radio telemetry antenna

Structure	Recommended Improvement
	• Mill and overlay of site asphalt
10 Administration Building	• Building renovation and expansion • MCC equipment replacement • HVAC equipment replacement – relocate AHU at grade • SCADA system upgrades
20 Preliminary Treatment Building	• Fine screen and washer/compactor equipment replacement • Influent pumps equipment replacement – install 4 20HP pumps and piping modifications • Pump access hatch replacements • Grit removal equipment replacement • Slide gate replacements • Concrete surface repairs and crack repairs • MCC equipment replacement • HVAC equipment replacement – relocate AHU at grade • Replace roof
25 Aeration and Mixing Basins	• Mixing basins gate replacements • Aeration piping modifications incorporating airflow meters and electrically actuated valves
30 Oxidation Ditch	• Aerator discs, gear boxes, and motors equipment replacement (stainless steel shafts can likely be reused) • Concrete surface repairs and crack repairs • Add removal mechanism for repair of inside drives
40 Clarifiers	• Mechanisms, launders, weirs, and baffles equipment replacement • Concrete surface repairs and crack repairs • Replace both buried 24” plug valves on MLSS to Clarifier 2 • Re-coat clarifier FRP covers and replace doors and louvers
40 Control Building	• RAS, WAS, and sludge transfer piping and valve replacements • Replace PVC piping on W3 system to CLDI/SST • HVAC equipment replacement – relocate AHU at grade • UV disinfection equipment replacement • Replace screw press feed pump and buried piping for screw press feed
60 Solids Handling Building	• Dewatered cake conveyor equipment replacement • MCC equipment replacement • Backup generator replacement • Ferric room piping and valve replacements • Ferric feed pump replacements • Ferric storage tank inspection and level monitoring replacement • HVAC equipment replacement – relocate AHU at grade (potentially reuse AHU) • Replace roof

Structure	Recommended Improvement
70 Sludge Storage Building	• Dewatered cake conveyor equipment replacement
80 Aerobic Digesters	• WAS thickener equipment replacement • Aeration diffuser equipment replacement • Mixer equipment replacement (potentially reuse 2 of the 3 gear boxes) • 2 Blowers equipment replacement (Dig 1-3) • 3 Blowers equipment replacement (Dig 4) • Concrete surface repairs and crack repairs • MCC equipment replacement • HVAC equipment replacement – relocate AHU at grade • Digester 4 – replace piping, valves, walkway (SS needed) • Digester 4 – concrete refurbishment • Digester 4 – recoat FRP cover with new door and louvers • Replace roof
Storage Building	• Building expansion

2.6.16 EXISTING FACILITY EFFLUENT QUALITY

Figure 2-1 depicts BOD_5 and TSS average month concentrations for final effluent discharged to the Wisconsin River. As shown, the plant produces an effluent that consistently meets discharge permit requirements for BOD_5 and TSS.

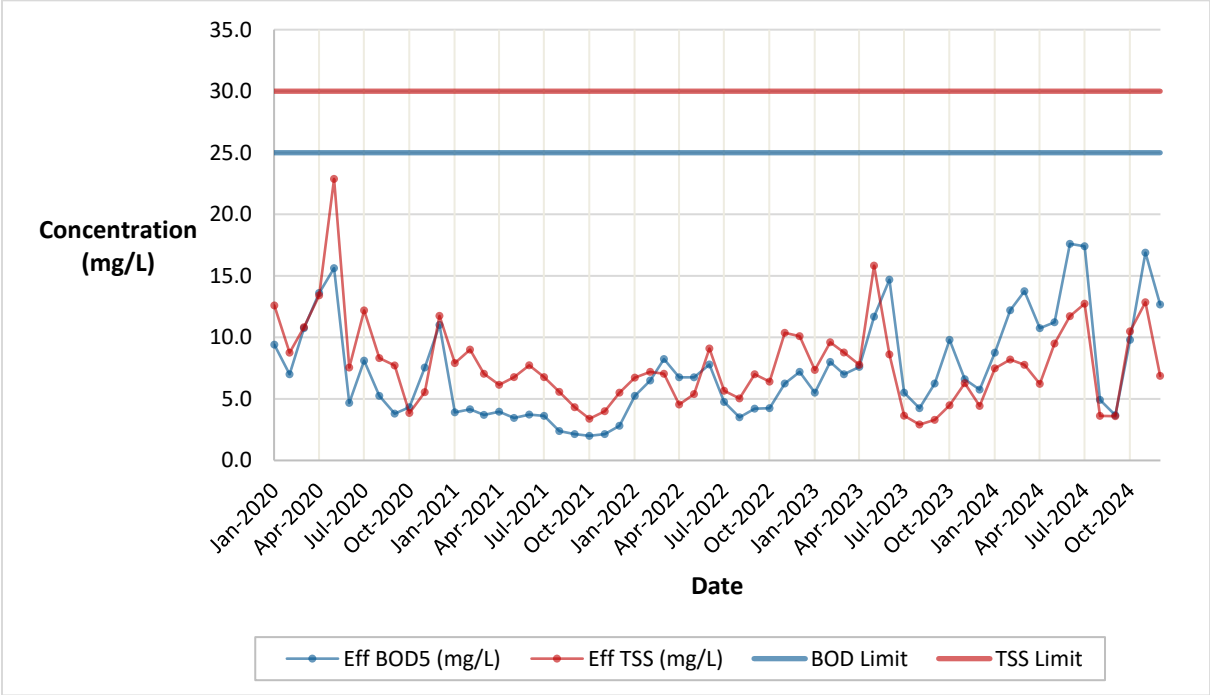


Figure 2-1 Existing Facility cBOD and TSS Effluent Quality

Figure 2-2 depicts the average monthly effluent TP concentration values for effluent discharged to the Wisconsin River. The maximum monthly average effluent TP concentration limit for the Plover WWTF is 0.93 mg/L. The WWTF also has a monthly TP loading limit of 7.96 ppd. The average monthly effluent TP loading values are shown in Figure 2-3. The WWTF consistently achieves compliance with both limits as shown.

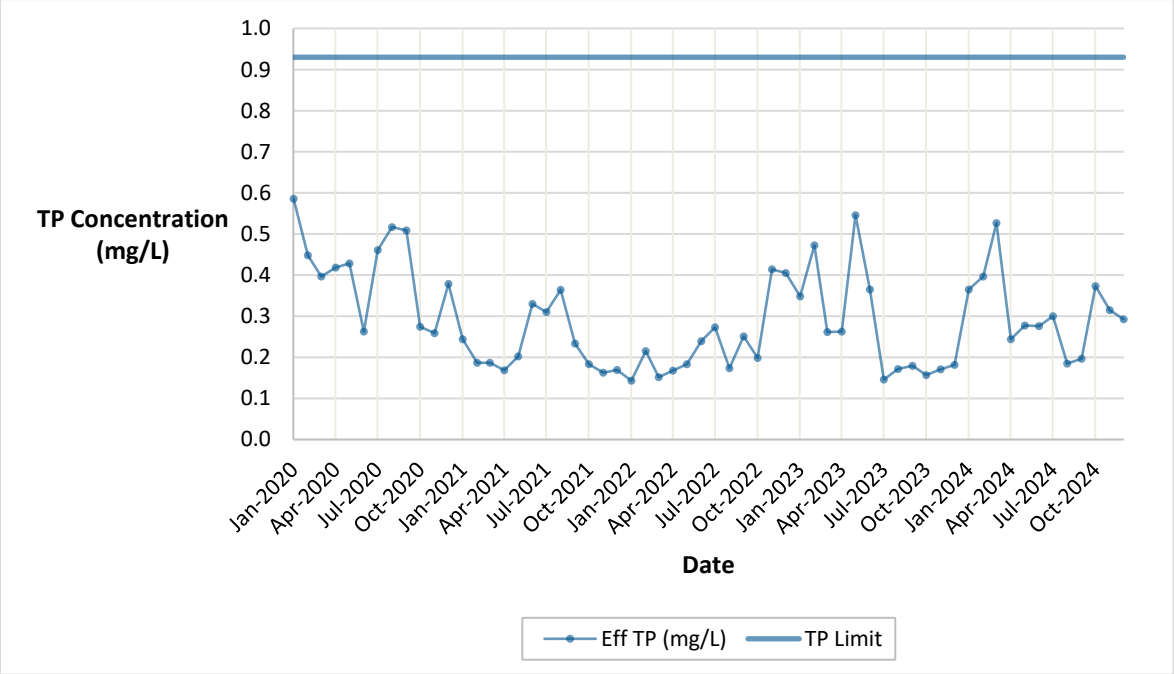


Figure 2-2 Existing Facility TP Effluent Concentration Quality

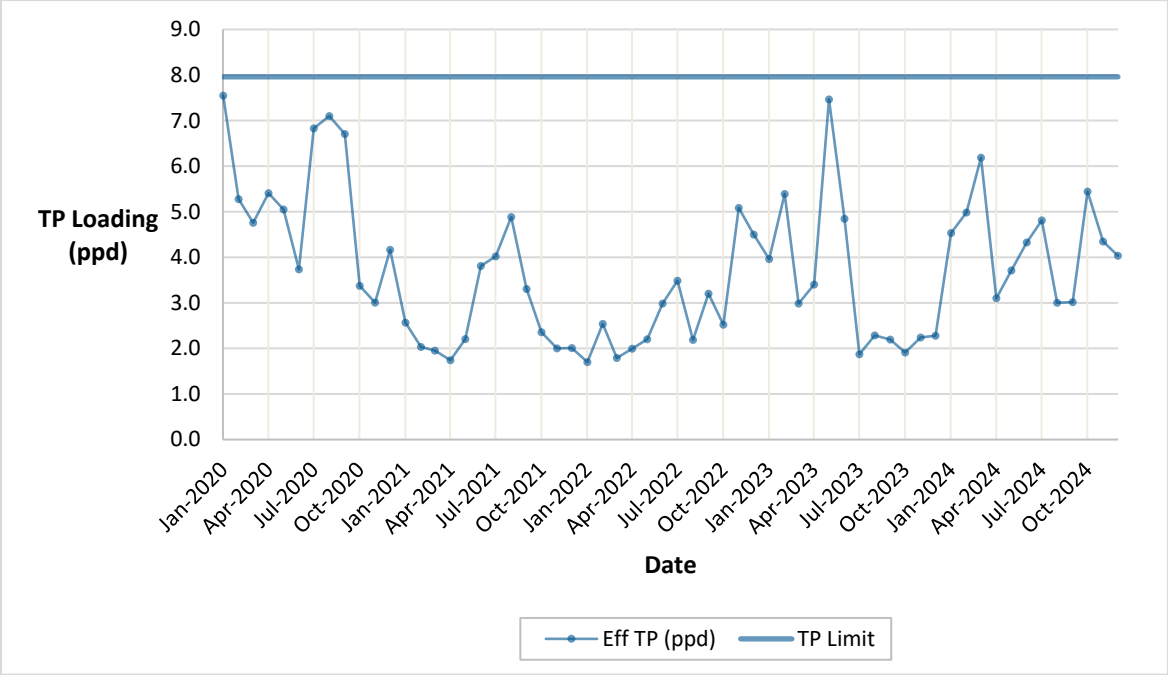


Figure 2-3 Existing Facility TP Effluent Loading Quality

Figure 2-4 depicts the daily effluent NH_3-N values for effluent discharged to the Wisconsin River. As shown, the plant produces an effluent that consistently meets the discharge permit requirements for NH_3-N.

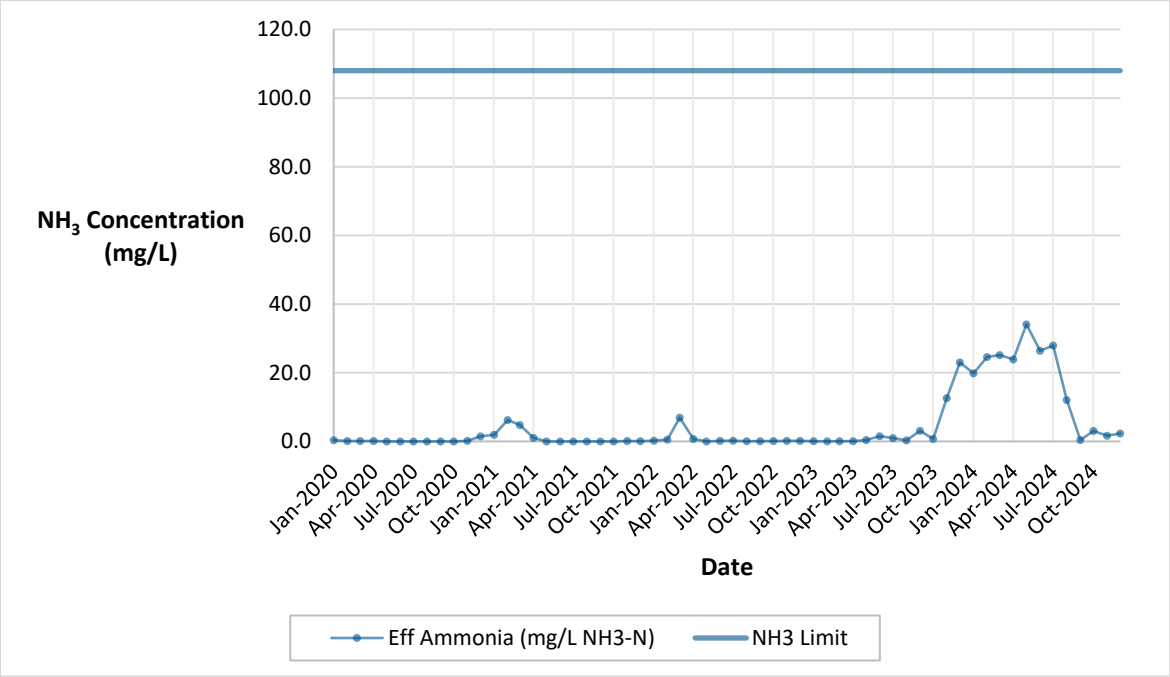


Figure 2-4 Existing Facility NH_3 Effluent Quality

3. DESIGN CRITERIA

3.1 DESIGN YEAR

A 20-year planning period is utilized for this facility plan as required by NR-110. The design year for the Plover WWTF is 2045. A short-term planning period will also be evaluated for identifying more immediate upgrades required. The short-term planning year for the Plover WWTF is 2035.

3.2 SEWER SERVICE AREA IDENTIFIED

The existing sewer service area and the projected 2045 sewer service area is outlined in Figure 3-1.

VILLAGE OF PLOVER WISCONSIN

DONOHUE

VILLAGE OF PLOVER 2025 AND 2045 SEWER SERVICE AREA

N

Feet
0 1,500

LEGEND

- 2045 Planned Sewer Service Area Boundary
- 2025 Sewer Service Area
- Municipal Boundary
- Parcels
- Open Water

CTH HH
PORTER RD
KENNEDY AVE
POST RD
HOOVER AVE
I-39
CTH R
PLOVER RD
2ND ST
STH 54
HAYES AVE
MONROE AVE
COOLIDGE AVE
BUCHAHAN AVE
JACKSON AVE
CLEVELAND AVE
LINCOLN AVE
PRAIRIE DR
STH 54

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

3.3 INFILTRATION/INFLOW ANALYSIS

An estimation of baseline flow is presented in Figure 3-2. As shown, the average daily flow to the plant peaks seasonally during periods of high groundwater and heavy precipitation, most notably in the spring and early summer. Estimating a baseflow flow provides a means of determining clearwater flows during these periods. From this data, a baseline flow equal to 1.2 has been estimated.

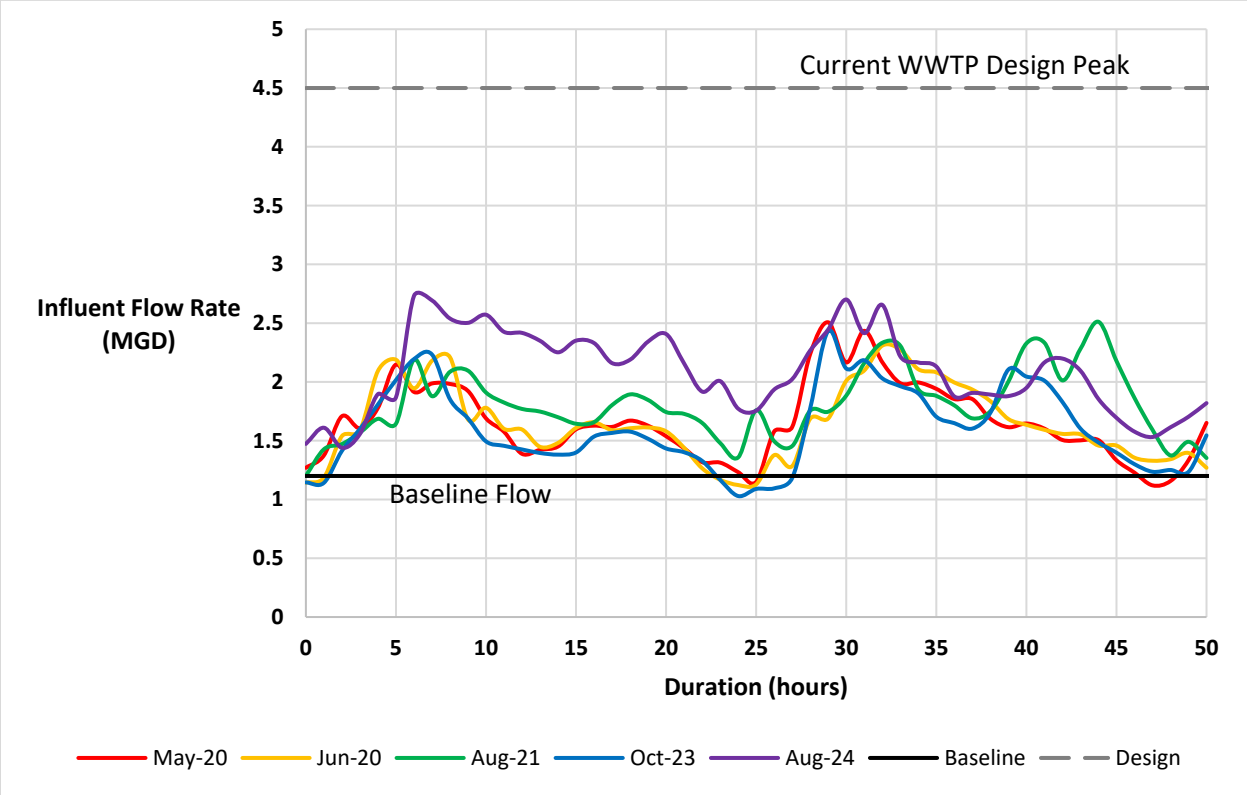


Figure 3-2 Plover WWTF Baseline Flow Estimation 2020 – 2024

An evaluation of clearwater flows is presented in Table 3-1. As shown, the average per capita dry weather flow during periods of high groundwater is estimated to be 109 gpcd. This falls below the threshold value established by Environmental Protection Agency (EPA) in 40 CFR 35.2120 of 120 gpcd, indicating non-excessive infiltration. As shown in Table 3-1, the average per capita wet weather flow is 87 gpcd. This is well below the threshold value established by EPA of 275 gpcd, indicating that inflow is not excessive.

The Village has implemented a program of collection system maintenance that includes flow monitoring and cleaning, manhole inspection, lift station maintenance and rehabilitation, and sewer televising if necessary. One third of the collection system is cleaned each year. In addition, one third of the system manholes are inspected each year. Maintenance is performed on all 10 lift stations annually. The collection system operation and maintenance program has helped maintain system integrity as shown by the minimal contribution of clearwater flows.

Table 3-1 Infiltration/Inflow Analysis Summary

Characteristic	Value	Units
Average Wastewater Flow to WWTF 2024	1.51	MGD
Per Capita Average Flow to WWTF 2024	109	gpcd
Average Baseline Flow Estimate 2024	1.20	MGD
Per Capita Average Baseline Flow*	87	gpcd
7 Day Average Flows During Seasonal high Groundwater		
5/1/2020 to 5/7/2020	1.55	MGD
3/30/2021 to 4/5/2021	1.22	MGD
3/6/2022 to 3/12/2022	1.44	MGD
3/23/2023 to 3/29/2023	1.40	MGD
3/12/2024 to 3/18/2024	1.42	MGD
Average Per Capita Flow During Seasonal High Groundwater*	102	gpcd
EPA Threshold	120	gpcd
Peak Wet Weather Flow		
Peak Daily Flows During Storm Events		
05/28/2020	1.72	MGD
06/20/2020	1.71	MGD
08/27/2021	1.96	MGD
10/26/2023	1.66	MGD
08/06/2024	1.98	MGD
Peak Per Capita Flow During Storm Event*	131	gpdc
Note: Per capita flow rates based on a current estimated sewered population of 13,770		

3.4 PROJECTED POPULATION FLOWS AND LOADINGS

3.4.1 PROJECTED POPULATION

The Wisconsin Department of Administration (DOA) prepares 20-year population projections for all municipalities within the state. The population of Plover is anticipated to increase over the next 20 years according to the Wisconsin DOA. Additionally, a Comprehensive Master Plan (CMP) for the Village of Plover was prepared in 2025. These two documents present comparatively similar population projections for the planning period.

The Plover Facility Plan Amendment is based upon a 20-year design period to 2045. The projected population for 2045 is 15,397. This reflects an approximate 14 percent increase in population over 2020 levels. The short term design year for the facility plan is based on a 10 year period to 2035. The projected population for 2035 is 14,530, which reflected an increase of 7 percent over 2020 levels.

Table 3-2 Plover WWTF Planning Area – 20-Year Population Projection

Municipality	Census 2010	Census 2020	Est. 2025	Projected 2030	Projected 2035	Projected 2040	Projected 2045
Village of Plover	12,123	13,519	13,770	14,200	14,530	14,770	15,397
Sources: 1. Data from 2025 to 2045 from Wisconsin Department of Administration, Demographic Services Center.							

3.4.2 FUTURE FLOWS AND LOADS

Current per capita flows and loadings for combined residential and commercial contributions are presented in Table 3-3. Values found in Table 3-3 are based on the current estimated service population of 13,770 and historical plant data from 2020 to 2024.

Table 3-3 Per Capita Flows & Loadings for Combined Residential and Commercial Contributions

Parameter	Average Annual Per Capita
Population	13,770
Flow (gpcd)	76
BOD5 (ppdpc)	0.2060
TSS (ppdpc)	0.2135
NH3 (ppdpc)	0.0156
TP (ppdpc)	0.0052

The per capita BOD and TSS loadings in Table 3-3 are higher than typically observed for municipal wastewater. Typical per capita loadings from residential sources range from 0.11 to 0.26 for BOD and 0.13 to 0.33 for TSS. Typical per capita loadings for NH_3 and TP are in line with those found in Table 3-3 with ranges of 0.011 to 0.026 and 0.006 to 0.01, respectively.

Design wastewater flows and loadings are developed in Table 3-4 through Table 3-6. Design average residential and commercial flows are based on the per capita loadings shown in Table 3-3. This projection method assumes that commercial growth will follow the population growth. Table 3-4 present the combined future residential and commercial flows and loadings.

Table 3-4 Future Residential and Commercial Flows & Loadings

Characteristic	Units	Existing	Forecast 2035	Forecast 2045	Peaking Factor
Annual Average Flow	MGD	1.05	1.1	1.2	-
Max Month Flow	MGD	1.28	1.4	1.4	1.2
Annual Average BOD	ppd	2,200	2,993	3,172	-
Max Month BOD	ppd	2,835	4,789	5,074	1.6
Annual Average TSS	ppd	2,940	3,102	3,287	-
Max Month TSS	ppd	3,377	3,632	3,923	1.2
Annual Average NH3	ppd	215	227	240	-
Max Month NH3	ppd	248	267	289	1.2
Annual Average TP	ppd	72	76	80	-
Max Month TP	ppd	118	125	133	1.7

The industrial flow and loading component was determined based on a survey of existing industries within the Plover SSA. One industrial contributor identified an increase in wastewater discharge within the next 10 years. Ingredion has an anticipated 25 percent wastewater discharge increase at their Willow Drive facility. In order to account for a new industrial customer or unanticipated growth at existing industrial customers, Donohue included a growth factor to the forecasts equivalent to the percent growth identified in the residential flows and loadings. Projected industrial flows and loadings are identified in Table 3-5.

Table 3-5 Future Industrial Flows & Loadings

Characteristic	Units	Existing	Forecast 2035	Forecast 2045	Peaking Factor
Annual Average Flow	MGD	0.41	0.44	0.46	-
Max Month Flow	MGD	0.57	0.61	0.64	1.4
Annual Average BOD	ppd	1,713	1,868	1,908	-
Max Month BOD	ppd	2,274	2,491	2,534	1.3
Annual Average TSS	ppd	2,068	2,212	2,312	-
Max Month TSS	ppd	3,694	4,027	4,152	1.8
Annual Average NH3	ppd	69	73	77	-
Max Month NH3	ppd	119	127	136	1.8
Annual Average TP	ppd	9	9	10	-
Max Month TP	ppd	19	20	21	2.2

The Plover WWTF currently accepts hauled waste consisting of landfill leachate and septage. Future hauled waste was estimated to increase parallel to the residential growth during the planning period. Future hauled waste flows and loadings are found in Table 3-6.

Table 3-6 Future Hauled Waste Flows & Loadings

Characteristic	Units	Existing	Forecast 2035	Forecast 2045	Peaking Factor
Annual Average Flow	MGD	0.05	0.11	0.17	-
Max Month Flow	MGD	0.10	0.17	0.26	1.5
Annual Average BOD	ppd	341	360	381	-
Max Month BOD	ppd	1,011	1,067	1,131	3.0
Annual Average TSS	ppd	248	262	278	-
Max Month TSS	ppd	1,184	1,273	1,375	5.0
Annual Average NH3	ppd	136	143	152	-
Max Month NH3	ppd	307	330	357	2.3
Annual Average TP	ppd	1.5	2	2	-
Max Month TP	ppd	3.5	4	4	2.3

The sum of residential, commercial, industrial, and hauled waste flow and loading components provides as estimate for the total influent flow to the Plover WWTF. Forecasted WWTF influent flows and loadings for 2035 and 2045 are presented in Table 3-7. In addition the existing flows and loadings and existing design rated capacity of the WWTF are presented to provide a comparison of current and future flows and the impact on plant capacity. Peaking factors for all flow and loading components are also found in Table 3-7.

Table 3-7 Future Plover WWTF Flows & Loadings

Characteristic	Units	Existing	Forecast 2035	Forecast 2045	Design Rated Capacity	Peaking Factor
Annual Average Flow	MGD	1.51	1.6	1.8	1.8	-
Max Month Flow	MGD	1.95	2.1	2.3	2.3	1.3
Annual Average BOD	ppd	4,890	5,221	5,461	7,950	-
Max Month BOD	ppd	7,824	8,347	8,740	10,600	1.6
Annual Average TSS	ppd	5,256	5,576	5,877	9,380	-
Max Month TSS	ppd	8,255	8,932	9,450	14,250	1.6
Annual Average NH3	ppd	420	443	469	-	-
Max Month NH3	ppd	674	724	782	-	1.7
Annual Average TP	ppd	82	86	91	120	-
Max Month TP	ppd	141	149	158	200	1.7

Design year 2045 average flows are approximately 19 percent higher than the existing average flows. Forecasted loadings for BOD, TSS, NH3-N, and TP are approximately 12 percent higher than existing average loadings.

3.5 CAPACITY OF EXISTING UNIT PROCESSES

The capacity of each individual treatment process is evaluated in this section. The standards used for determining the capacity requirements for each unit process from the Wisconsin Administrative Code

Chapter NR 110 on Sewerage Systems (WDNR, 1990), Recommended Standards for Wastewater Facilities (also referred to as "Ten-States Standards", Great Lakes, 1997), and Water Environment Federation's Manual of Practice 8 (WEF MOP 8, WEF, 1998). All three sources are recognized by the Wisconsin DNR for determining capacity and sizing requirements for wastewater treatment processes.

3.5.1 CURRENT CAPACITY EVALUATION

Table 3-8 and Figure 3-3 summarize the capacity evaluation for each unit process at 2025 flows and loadings. As shown, at current flows and loadings all unit processes have adequate capacity.

Table 3-8 Capacity Evaluation at 2025 Flows and Loadings

Unit Process	Capacity Description	Units	Rated Capacity	Utilization at Design	% Capacity
Raw Wastewater Pumping	Peak Hour	MGD	5.3	2.7	51%
Fine Screening	Peak Hour	MGD	4.8	2.7	57%
Grit Removal	Peak Hour	MGD	4.5	2.7	61%
Aerobic Reactors (Aeration + Oxidation)	Max Month	ppd	10,600	7,323	69%
Final Clarifiers SOR	Peak Hour	MGD	5	2.7	57%
UV Disinfection	Peak Hour	MGD	4.8	2.7	57%
Return Activated Sludge Pumping	Average Annual	gpm	1,875	1,046	56%
Gravity Belt Thickener	Max Month	gpm	360	259	72%
Aerobic Digesters	Max Month	gpd	34,211	23,634	69%
Digesters Aeration	Max Month	scfm	3,720	2,195	59%
Screw Press Dewatering	Max Month	gpm	72	37	51%
Screw Press Dewatering (dry)	Max Month	pph	700	492	70%
Cake Storage	180 Days at Annual Average	cy	2,700	2,285	85%

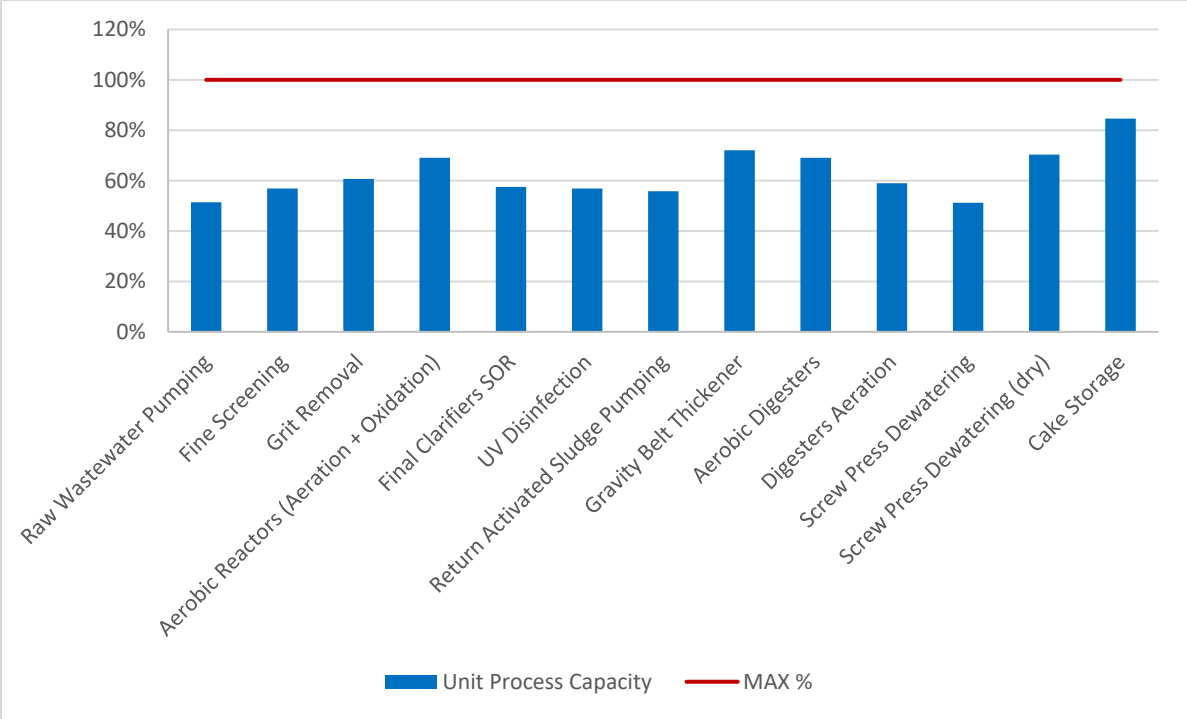


Figure 3-3 2025 Unit Process Capacity Summary

3.5.2 FUTURE CAPACITY EVALUATION

Table 3-9 and Figure 3-4 display summarize the capacity evaluation for each unit process at 2045 projected flows and loadings. As shown, at current flows and loadings all unit processes have adequate capacity. Although cake storage is projected to reach capacity by 2045, Donohue believes the WWTF will adequately treat projected loadings and can be re-assessed during a future facility plan.

Table 3-9 Capacity Evaluation at 2045 Flows and Loadings

Unit Process	Capacity Description	Units	Rated Capacity	Utilization at Design	% Capacity
Raw Wastewater Pumping	Peak Hour	MGD	5.3	3.3	62%
Fine Screening	Peak Hour	MGD	4.8	3.3	68%
Grit Removal	Peak Hour	MGD	4.5	3.3	73%
Aerobic Reactors (Aeration + Oxidation)	Max Month	ppd	10,600	8,740	82%
Final Clarifiers SOR	Peak Hour	MGD	5	3.3	69%
UV Disinfection	Peak Hour	MGD	4.8	3.3	68%
Return Activated Sludge Pumping	Average Annual	gpm	1,875	1,253	67%
Gravity Belt Thickener	Max Month	gpm	360	290	80%
Aerobic Digesters	Max Month	gpd	34,211	28,206	82%
Digesters Aeration	Max Month	scfm	3,720	2,619	70%
Screw Press Dewatering	Max Month	gpm	72	41	57%
Screw Press Dewatering (dry)	Max Month	pph	700	550	79%
Cake Storage	180 Days at Annual Average	cy	2,700	2,552	95%

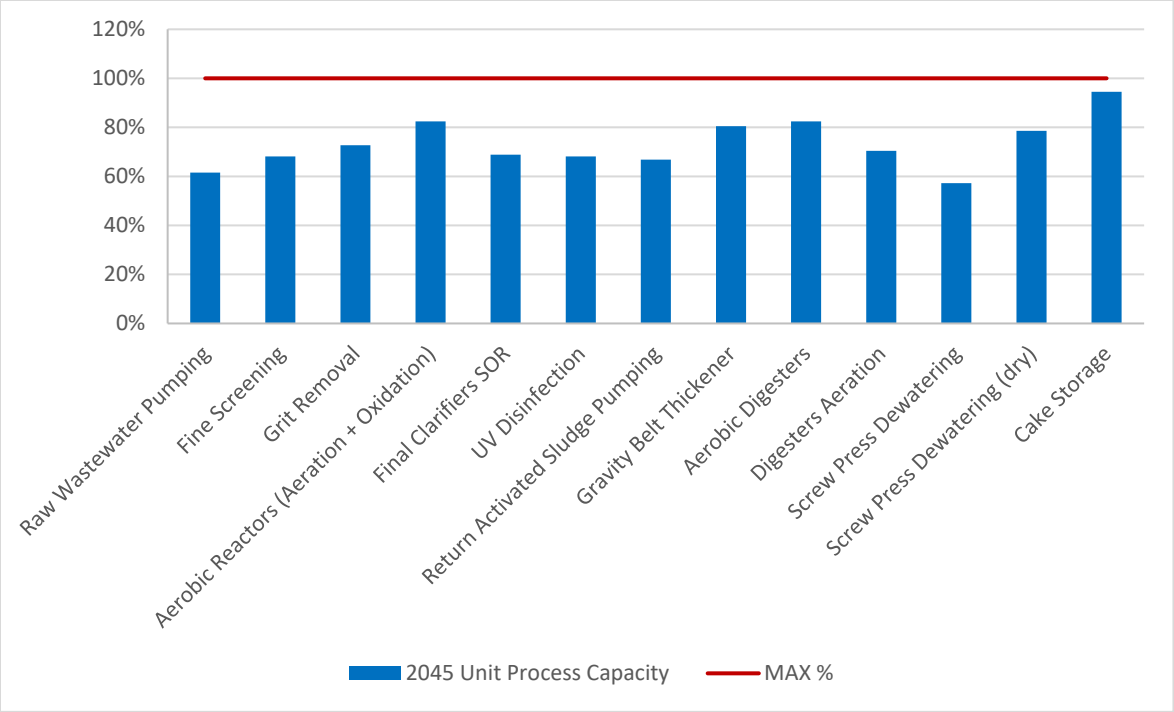


Figure 3-4 2045 Unit Process Capacity Summary

4. ALTERNATIVES ANALYSIS

4.1 TOTAL PRESENT WORTH COST ANALYSIS

A cost-effectiveness analysis is performed to determine which wastewater treatment alternative will minimize total resource cost for the design life of the facilities and remain compatible with water quality goals. In a cost-effectiveness analysis using the present worth analysis method, future costs are reduced to their present wroth cost and summarized for each alternative. Future expenditures are converted to a present worth cost at the beginning of the planning period. The planning period is a time span for which alternative wastewater collection and treatment facilities are evaluated for cost-effectiveness. Typically a 20-year planning period is selected which corresponds to the design life of much of the process equipment.

The total capital investment includes:

1. Initial capital construction costs plus engineering, legal, and administrative costs.
2. The capital costs necessary for major equipment replacement during the planning period. All future costs are discounted to the present using a single payment present worth factor computed at 2.5 percent; the present federally mandated discount rate. This yields the amount of money that must be theoretically invested at 2.5 percent when the project is initially constructed so that the capital required for equipment replacement would be available when such expenditures are required.

The salvage value at the end of the planning period, which represents a credit, must also be considered in the present worth costs. Structures and equipment with a service life extending beyond the 20-year planning period are considered to have a salvage value. Straight-line depreciation methods are used to determine the salvage value for these components. The single-payment present worth factor computed at 2.5 percent is also applied to the total salvage value. The resulting present worth is subtracted from the present worth cost for each alternative.

The values of operation and maintenance costs that occur during the planning period are discounted to a present worth. Only the operating costs that are impacted by the treatment alternatives such as chemical costs, power costs, and solids handling and disposal are considered. All other operating costs are the same for all alternatives and are not included in the present worth analyses. The value of operation and maintenance costs that occur during the planning period is obtained by multiplying the estimated average operation and maintenance expenses during the 20-year planning period by a series of present worth factor computed at 2.5 percent. This yields the amount of money that must be theoretically invested at 2.5 percent when the project is initially constructed so that the annual operation and maintenance expenses can be paid each year for the 20-year facilities design life.

Inflation of costs during the planning period was not considered in the analysis as specified in the Environmental Protection Agency (EPA) guidelines. Therefore, all costs quotes are based on 2025 costs and salvage values. The employed assumption is that all prices involved with tend to change by approximately the same percentage; thus, the results and conclusions drawing from the present worth cost analysis will not be affected by changes in the general level of prices.

4.2 ALTERNATIVES ANALYSIS

This section evaluates unit process alternatives for meeting the wastewater treatment needs of Plover for a projected planning year of 2045. The existing condition is included in each alternative evaluation to provide a reference point for comparison of the various alternatives. In several cases, the existing condition is not feasible. A detailed cost estimate for each alternative are presented in Appendix D.

4.2.1 RECOMMENDED UPGRADES WITH NO ALTERNATIVES

Several recommended improvements were identified during the existing facility condition assessment. These identified improvements do not have alternatives and are discussed in Section 2.6 and summarized in Table 2-2. The cost opinion for these recommended improvements is provided in Appendix D and summarized below in Table 4-1.

Table 4-1 Estimated Costs for Recommended Condition Assessment Upgrades

Item	Alternative 1
Labor	$0
Disposal	$0
Electricity	$3,600
Natural Gas	$1,800
Equipment Maintenance	$0
Chemicals	$0
Estimated Annual O&M Cost	$5,400
O&M Present Worth	$114,000
Estimated Project Cost	$22,373,000
Salvage Value of New Structures	$(134,000)
Total Present Worth	$22,353,000

4.2.2 ACTIVATED SLUDGE OXIDATION DITCH UPGRADE

The previous 2009 Facility Plan laid out a plan of continuing construction of new rectangular aeration basins as capacity needs increased and the oxidation ditch structure reached the end of its useful life. This evaluation considers two alternatives, (1) replacement in kind of the existing oxidation ditch aerator equipment and (2) expansion of the rectangular aeration basins and demolishing the oxidation ditch structure.

Alternative 1: Since the capacity evaluation concluded that the facility has adequate capacity for projected 2045 flows and loadings, an expansion is not needed. However, the condition assessment identified the need for replacement of the oxidation ditch aerators. This alternative continues to use the oxidation ditch for the next 20 years. The structure is in fair condition and is anticipated to be useful for another 20 years with minor concrete refurbishment and crack repairs.

Alternative 2: At some point in the future the Village will need to continue expansion of the rectangular aeration tanks. This alternative looks at demolishing the oxidation ditch and expanding the rectangular aeration tanks to match the current facility's treatment capacity. The new expansion would add 3

million gallons of aeration tank volume to replace the volume of the oxidation ditch. A potential site layout of this alternative is shown in Figure 4-1.

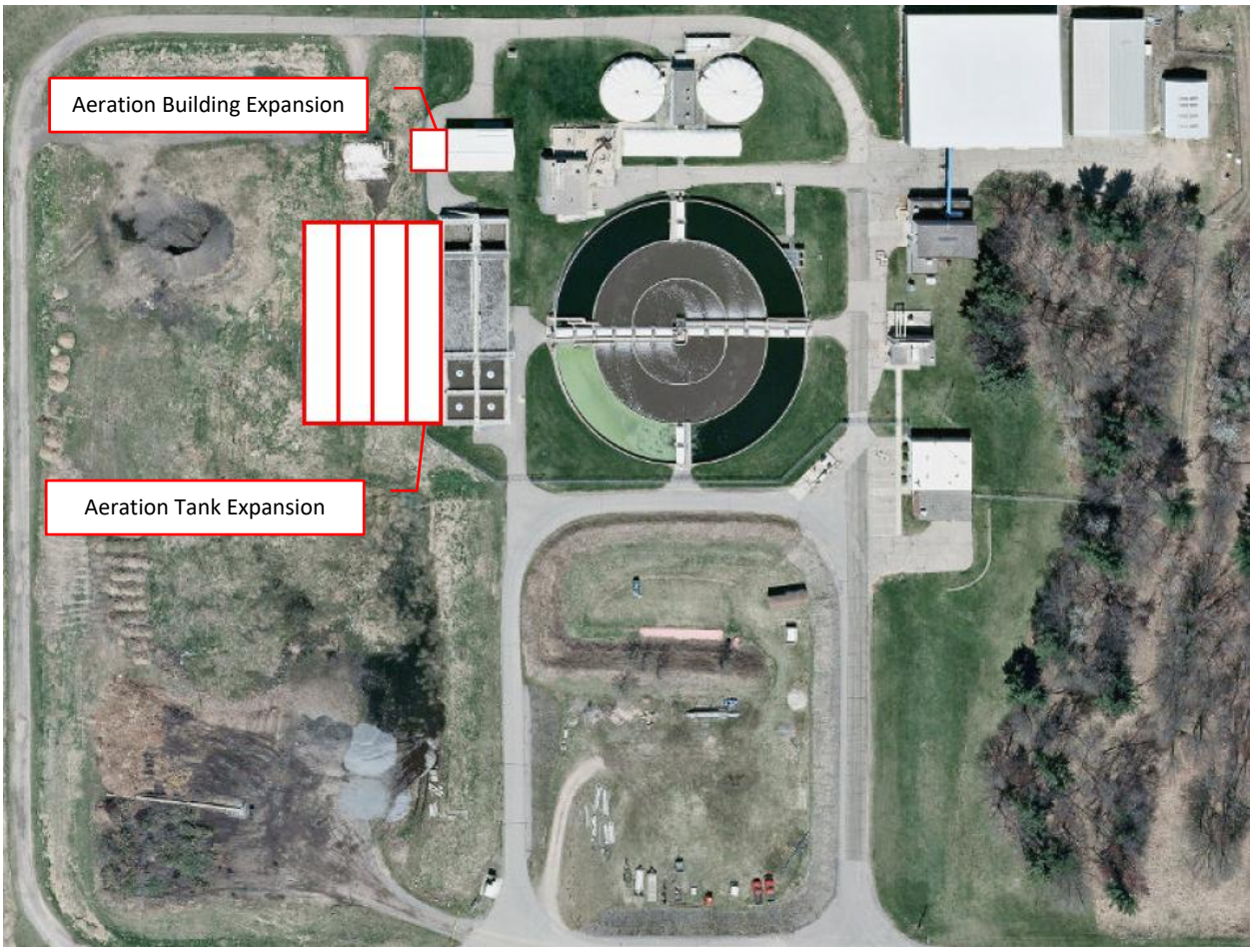


Figure 4-1 Rectangular Aeration Tank Expansion Concept Site Layout

Estimate costs for both alternatives are provided in Appendix D and summarized in Table 4-2.

Table 4-2 Estimated Costs for Activated Sludge Upgrade Alternatives

Item	Alternative 1 Oxidation Ditch Equipment Replacement	Alternative 2 Rectangular Aeration Tank Expansion
Labor	$0	$0
Disposal	$0	$0
Electricity	$0	$0
Natural Gas	$0	$0
Equipment Maintenance	$0	$0
Chemicals	$0	$0
Estimated Annual O&M Cost	$0	$0
O&M Present Worth	$0	$0
Estimated Project Cost	$4,801,000	$14,770,000
Total Present Worth	$4,801,000	$13,825,000

Donohue recommends Alternative 1 Oxidation Ditch Equipment Replacement based on the significant difference in total present worth cost estimates.

4.2.3 WAS THICKENING

The WAS thickening evaluation considered two alternatives using two types of technology. Alternative 1 includes replacement in kind of the existing gravity belt thickener. Alternative 2 includes a technology change to a rotary drum thickener. The existing WAS gravity belt thickener is in building 80, attached to the three existing aerobic digesters. Advantages of the rotary drum technology for WAS thickening in comparison to a gravity belt thickener include being a totally enclosed unit, which better contains spray and any odors. Both technologies are relatively easy to disassemble and maintain. Estimated costs for both WAS thickening alternatives are provided in Appendix D and summarized below in Table 4-3.

Table 4-3 Estimated Costs for WAS Thickening Alternatives

Item	Alternative 1 Gravity Belt Thickener	Alternative 2 Rotary Drum Thickener
Labor	$0	$0
Disposal	$0	$0
Electricity	$0	$0
Natural Gas	$0	$0
Equipment Maintenance	$0	$0
Chemicals	$0	$0
Estimated Annual O&M Cost	$0	$0
O&M Present Worth	$0	$0
Estimated Project Cost	$1,274,000	$1,341,000
Total Present Worth	$1,274,000	$1,341,000

Both alternatives are relatively close in estimated cost. Donohue recommends holding off on selecting the thickening equipment technology for replacement of the WAS thickener until preliminary design phase when a more detailed cost estimate can be prepared for determination of the best technology.

4.2.4 AEROBIC DIGESTION

The aerobic digestion alternative includes two alternatives including Alternative 1 to refurbish the existing digesters and maintain a Class B land application program and Alternative 2 to replace the process with a new autothermal thermophilic aerobic digestion (ATAD) process that would produce Class A biosolids.

Class A biosolids undergo a process to further reduce pathogens to a level that is nearly non-detectable compared to native soil and environment, eliminating crop harvest and public access restrictions. Class A EQ biosolids can be distributed to and used by the public as a fertilizer product and have minimal regulatory requirements. In addition to agriculture, these end products can be used for landscaping, horticulture, and other public uses.

Due to the additional processing required to reduce pathogen levels, the initial cost to produce Class A biosolids is often higher than the cost to produce Class B biosolids. Relaxed regulations, however, offer the potential to reduce annual costs for biosolids disposal. The increasingly troublesome and restrictive logistics inherent with Class B land application programs are prompting an increasing number of facilities to invest in Class A technologies.

Alternative 1 includes the upgrades identified in the condition assessment with replacement of the aeration diffusers, mixers, and blowers along with concrete surface repairs and crack repairs.

Alternative 2 includes new jet aeration systems retrofitted into the existing three aerobic digester tanks. An additional 45’ diameter tank with cover would be constructed to operate as a post aerated digested sludge storage tank. This tank would allow the aerated biosolids to nitrify and denitrify before transferring to the sludge storage tank (existing digester 4) prior to dewatering. Additional equipment

required for this new system would be located in a new aerobic digester equipment building. A conceptual site layout of this alternative is shown in Figure 4-2.



Figure 4-2 ATAD Process Concept Site Layout

Estimate costs for both alternatives are provided in Appendix D and summarized below in Table 4-4.

Table 4-4 Estimated Costs for Aerobic Digestion Alternatives

Item	Alternative 1 Refurbishment and Equipment Replacement	Alternative 2 Class A ATAD System
Labor	$0	$27,500
Disposal	$0	($10,000)
Electricity	$0	$50,000
Natural Gas	$0	$0
Equipment Maintenance	$0	$20,000
Chemicals	$0	$0
Estimated Annual O&M Cost	$0	$87,500
O&M Present Worth	$0	$1,817,000
Estimated Project Cost	$2,419,000	$17,269,000
Total Present Worth	$2,419,000	$18,736,000

Donohue recommends Alternative 1 Refurbishment and Equipment Replacement based on the significant difference in total present worth cost estimates. At this time there is no significant regulation driver pushing the village to need a Class A biosolids program.

4.2.5 BIOSOLIDS DRYING

In addition to meeting Class A biosolids requirements, reducing land application restrictions, and challenges, drying dramatically reduces biosolids volumes, weights, and, in turn, vehicle traffic to/from a Facility and on roads. EPA regulations codify the parameters constituting the requirements to produce a Class A product. Biosolids drying is often used to produce Class A biosolids.

The biosolids drying evaluation considered three alternatives using three types of technology. These technologies include (1) belt dryer, (2) paddle dryer, and (3) solar dryer. Currently after biosolids dewatering, finished product is conveyed to cake storage and land applied. The WWTF currently land applies cake as a Class (B) biosolid at 16% to 18% solids content. Drying removes the majority of water content in the sludge and produces a product above 90% solids content.

Paddle Dryer

Paddle drying passes biosolids through a chamber with rotating shafts that indirectly applies heat to the biosolids. Resulting products from paddle dryers satisfy requirements for Class A biosolid classification. Advantages and disadvantages of paddle dryer technology is summarized below in Table 4-5. A conceptual site layout for the paddle dryer alternative is shown in Figure 4-3. A new building would be constructed next to the existing solids handling building to house the new dryer equipment.



Figure 4-3 New Dryer Building Concept Site Layout

Table 4-5 Advantages and Disadvantages of Paddle Dryer Technology

Advantages	Disadvantages
• Indirect • Small footprint • Low clearance • Product temperature • Sieve product • Single pass process • Minimum air handling	• Heavy • Hot oil or steam • Cooling water • Non-uniform end product • Internal moving parts

Belt Dryer

Belt drying conveys biosolids along a belt while applying hot air directly onto the biosolids. Belt dryers can produce Class A biosolids. Advantages and disadvantages of belt dryer technology is summarized below in Table 4-6. Similar to the paddle dryer alternative, a new dryer building would be constructed

next to the existing solids handling building. A conceptual site layout for the new dryer building is shown in Figure 4-3.

Table 4-6 Advantages and Disadvantages of Belt Dryer Technology

Advantages	Disadvantages
• Safety • Start/stop efficiently • Waste heat • Low emissions • Modular • Lower temperature • Simple operation • Potential reuse of waste heat • May not require biosolids cooling	• Footprint and height • Fans • Less desirable end product

Solar Dryer

Solar drying uses solar radiation to evaporate water form biosolids. This is depicted in Figure 4-4. Sludge is distributed uniformly across the floor of building with a glass housing that looks and functions like a conventional "greenhouse." Traveling agitators mix the biosolids to maintain aerobic conditions, renew the exchange surface area, and gradually move increasingly dry sludge from one end of the greenhouse to the other. Solar energy is the main mechanism of drying; however, air or floor heating can be used to expedite drying. Intensive ventilation moves saturated air out of the housing.

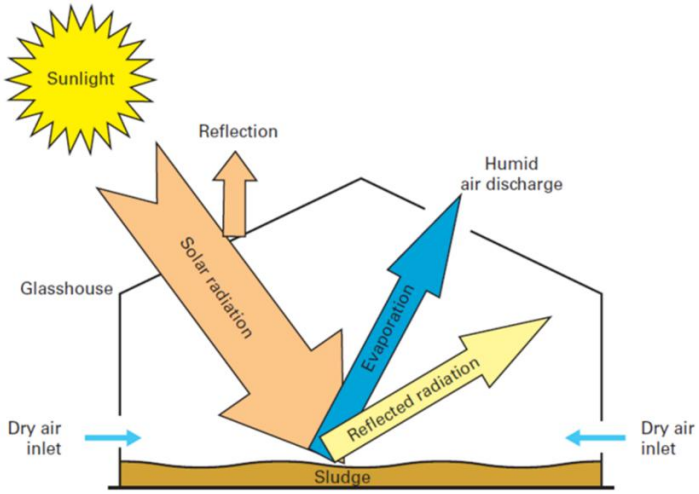


Figure 4-4 Solar Drying Illustration

Solar drying can dry biosolids to approximately 90%. Depending on the time of year, solar availability, and State-specified regulatory requirements, solar drying has the potential to produce a Class A product. Dried product can be transferred to storage or directly hauled for reuse. Table 4-7 list advantages and disadvantages of solar drying.

Table 4-7 Advantages and Disadvantages of Solar Drying Technology

Advantages	Disadvantages
• Safety • Simplicity • Low carbon footprint • Enhances storage capacity by reducing volume and adding volume	• Large spatial footprint* • Low drying rate* • Few installations • Class A certification challenges

*As compared to other drying technologies installed in region

A conceptual site layout for the solar dryer alternative is shown below in Figure 4-5.

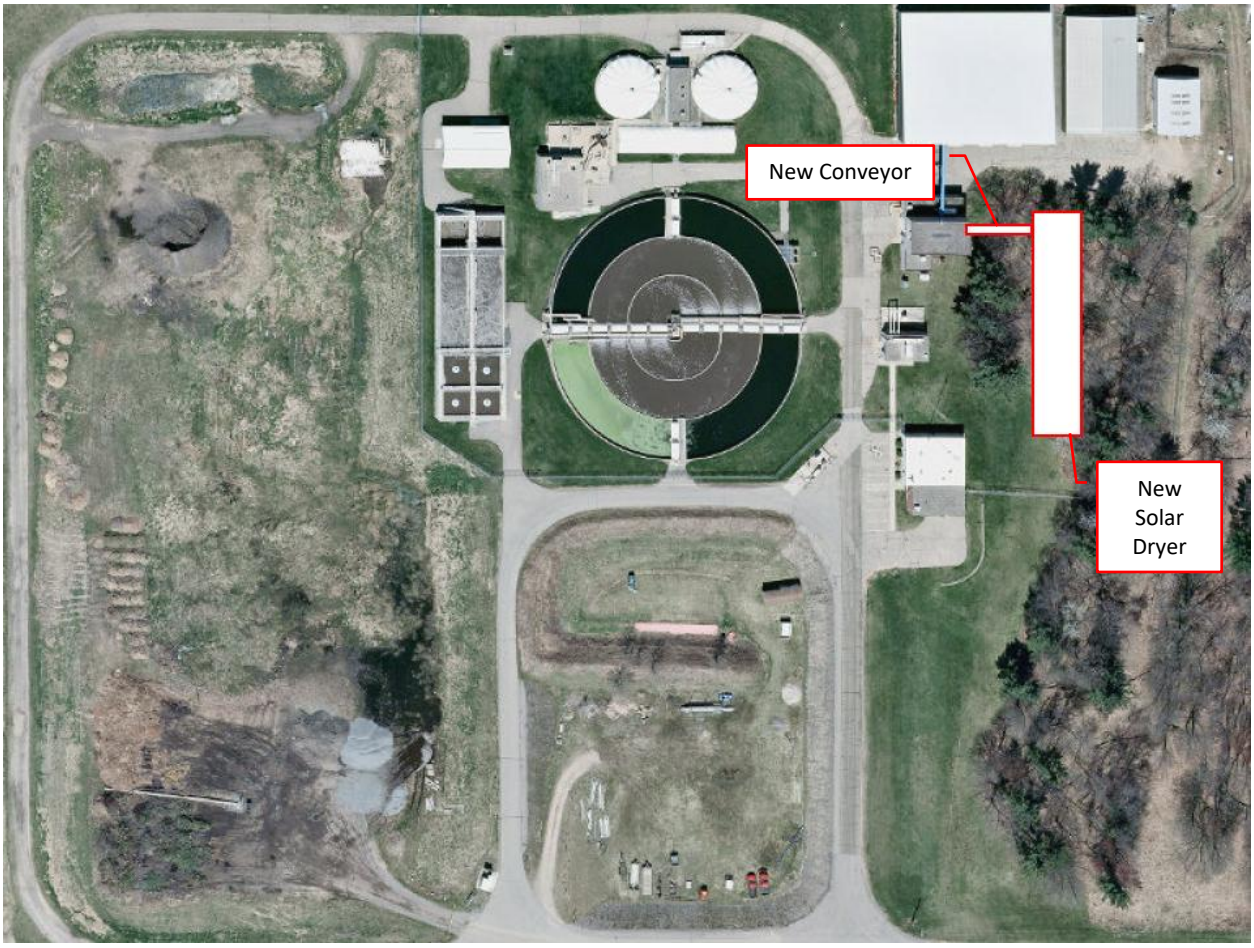


Figure 4-5 Solar Drying Concept Site Layout

Estimates costs for the biosolids drying alternatives are provided in Appendix D and summarized below in Table 4-8.

Table 4-8 Estimated Costs for Biosolids Drying Alternatives

Item	Alternative 1 Paddle Dryer	Alternative 2 Belt Dryer	Alternative 3 Solar Dryer
Labor	$90,000	$90,000	$35,000
Disposal	($35,000)	($35,000)	($25,000)
Electricity	$30,000	$30,000	$17,000
Natural Gas	$95,000	$95,000	$40,000
Equipment Maintenance	$20,000	$20,000	$10,000
Chemicals	$0	$0	$0
Estimated Annual O&M Cost	$200,000	$200,000	$77,000
O&M Present Worth	$4,440,000	$4,440,000	$1,738,000
Estimated Project Cost	$17,257,000	$20,627,000	$6,460,000
Total Present Worth	$20,780,000	$24,150,000	$8,037,000

Donohue recommends holding off on further investigation of drying alternatives until regulations or other conditions create a need for the village to consider implementation. These alternatives can be further evaluated at that time.

4.3 SITE INVESTIGATION

To evaluate the feasibility of utilizing the current site, a site investigation was completed. All work recommend in the previously described alternatives will be completed on village owned property of the wastewater treatment facility. The site is adjacent to the Wisconsin River, where the plant discharges. The land directly east and west of the property is village owned and the land directly north and south are privately owned.

WDNR Endangered Resources Review

As part of the site investigation, the site was analyzed for Endangered Resources Review through the Natural Heritage Inventory Public Portal. The portal assessed the site for potential impacts on endangered resources. The search was conducted within a 1-mile buffer (for terrestrial and wetland species) and a 2-mile buffer (for aquatic species) of the project area. The results are favorable for future site development. One butterfly species was noted as potential impact. The impacts of site development can be minimized through assessment of the site for the host plant for this butterfly species. Site assessment can be performed through ground photos in the spring or summer or through site surveys. Additional resources identified in the report were concluded to be little to no impact and include two bird species, three community locations, one fish variety, and two plant species. The full report is provided in Appendix E.

Cultural Resource Review

Also included in the site investigation was a cultural resource review. Using the Wisconsin Historic Preservation Database, the WWTF site was cross referenced with the four available databases. The

databases include Archaeological Report Inventory (ARI), Archaeological Sites Inventory (ASI), Architecture and History Inventory (AHI), and National Register of Historic Places (NR). Based on the results, only the ARI database returned results. The results identify an archaeological survey conducted in 1979 and an amendment to the survey also issued in 1979. Results of the survey indicate that are no archaeological material of features noted with no further work recommended. The output from all the databases can be viewed in Appendix E.

5. PUBLIC PARTICIPATION

5.1 PUBLIC WORKS MEETING

[TO BE ADDED FOLLOWING MEETING]

6. PROJECT SELECTION AND IMPLEMENTATION

6.1 UPGRADE RECOMMENDATIONS

Donohue recommends the following upgrades and replacements identified in the Facility Plan assessments and evaluations:

1. All recommended condition assessment upgrades identified in Table 2-2.
2. Activated Sludge: Oxidation ditch equipment replacement (Alternative 1)
3. WAS Thickening: Equipment replacement (select technology during preliminary design phase)
4. Aerobic Digestion: Refurbishment and equipment replacement (Alternative 1)
5. Biosolids drying: Do nothing and evaluate further at a later date

The recommended upgrades are summarized below in Table 6-1.

Table 6-1 Recommended Upgrades

Structure	Recommended Improvement
WWTF Site	• Add a main entrance gate and access controller with key card reader and PIN pad • Construct a new septage receiving station • Mill and overlay of site asphalt • Replace radio telemetry antenna
10 Administration Building	• Building renovation and expansion • MCC equipment replacement • HVAC equipment replacement • SCADA system upgrade
20 Preliminary Treatment Building	• Fine screen and washer/compactor equipment replacement • Influent pumps equipment replacement – install 4 20HP pumps and piping modifications • Replace pump access hatches • Grit removal equipment replacement • Concrete surface repairs and crack repairs • Slide gate replacements • MCC equipment replacement • HVAC equipment replacement (locate at grade) • Replace roof
25 Aeration and Mixing Basins	• Mixing basins gate replacements • Aeration piping modifications incorporating airflow meters and electrically actuated valves
30 Oxidation Ditch	• Aerator discs, gear boxes, and motors equipment replacement (stainless steel shafts can likely be reused) • Concrete surface repairs and crack repairs • Add removal mechanism for repair of inside drives

Structure	Recommended Improvement
40 Clarifiers	• Mechanisms, launders, weirs, and baffles equipment replacement • Concrete surface repairs and crack repairs • Replace both buried 24" plug valves on MLSS to Clarifier 2 • Re-coat clarifier FRP covers and replace doors and louvers
40 Control Building	• RAS, WAS, and sludge transfer piping and valve replacements • Replace PVC piping on W3 system to CLDI/SST • HVAC equipment replacement • UV disinfection equipment replacement • Replace screw press feed pump and buried piping for screw press feed
60 Solids Handling Building	• Dewatered cake conveyor equipment replacement • MCC equipment replacement • Backup generator replacement • HVAC equipment replacement - locate at grade (potentially reuse AHU) • Ferric room piping and valve replacements • Ferric pump replacements • Ferric tank inspection and level monitoring replacement • Replace roof
70 Sludge Storage Building	• Dewatered cake conveyor equipment replacement
80 Aerobic Digesters	• WAS thickener equipment replacement • Aeration diffuser equipment replacement • Mixer equipment replacement (potentially reuse 2 of the 3 gear boxes) • 2 Blowers equipment replacement (Dig 1-3) • 3 Blowers equipment replacement (Dig 4) • Concrete surface repairs and crack repairs • MCC equipment replacement • HVAC equipment replacement (locate at grade) • Digester 4 – replace piping, valves, walkway (SS needed) • Digester 4 – concrete refurbishment • Digester 4 – recoat FRP cover with new door and louvers • Replace roof
Storage Building	• Building expansion

Following a joint review of the complete recommendations list with Village wastewater utility staff, the staff evaluated the relative priorities of the proposed upgrades. A few lower priority items were identified for deferral and future re-evaluation. These include:

- Oxidation ditch aerator discs, gear boxes, and motors equipment replacement
- Oxidation ditch concrete repairs
- Replacement of RAS, WAS, and sludge transfer piping and valves within the Control Building

After removing these items from the recommendations list, the estimated project cost for the remaining recommended upgrades is $26M. See Table 6-2 for a summary of the estimated project costs.

Table 6-2 Estimated Project Cost of Recommended Improvements after Priority Review

Item	Estimated Project Cost
Condition Assessment Upgrades	$22,373,000
WAS Thickening Equipment	$1,274,000
Aerobic Digester Refurbishment and Equipment Replacement	$2,419,000
Total Estimated Project Cost	**$26,066,000**

6.2 RATE IMPACT ANALYSIS

The current average residential user rate is approximately $62.00 per quarter. In order to compare potential impacts to residential user rates, the estimated capital cost of the recommended project was converted into an annual debt service payment assuming the Clean Water Fund Loan program is utilized for a 20-year term loan at the current subsidized interest rate of 2.475%. The estimated annual debt service payment along with the additional annual operation and maintenance cost was inputted into the Village's sewer rate model to estimate new average residential user rates. The estimated average residential user rate for implementation of these upgrades is $100.00 per quarter. These estimated user rates are for comparison only. A rate study will be necessary to determine recommended rates.

6.3 IMPLEMENTATION

Donohue recommends beginning design for the recommended upgrades in 2026 and completing design in mid-2027. Construction would follow immediately after design and is estimated to finish towards the end of 2029.

APPENDICIES

- Appendix A – Current WPDES Permit
- Appendix B – Stevens Point Urban Area Sewer Service Planning Area Excerpts
- Appendix C – Village of Plover Comprehensive Master Plan Excerpts
- Appendix D – Opinion of Probable Costs
- Appendix E – Site Investigation

Appendix A

Current WPDES Permit

WPDES PERMIT

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM

Village of Plover

is permitted, under the authority of Chapter 283, Wisconsin Statutes, to discharge from a facility located at
4496 Coolidge Ave, Plover, WI
to
Wisconsin River in the Fourmile and Fivemile Creek Watershed (Central Wisconsin River Basin), Portage County

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

The permittee shall not discharge after the date of expiration. If the permittee wishes to continue to discharge after this expiration date an application shall be filed for reissuance of this permit, according to Chapter NR 200, Wis. Adm. Code, at least 180 days prior to the expiration date given below.

State of Wisconsin Department of Natural Resources
For the Secretary

By _____
Geisa Thielen
Wastewater Field Supervisor

December 18, 2024
Date Permit Signed/Issued

PERMIT TERM: EFFECTIVE DATE - January 1, 2025 **EXPIRATION DATE - December 31, 2029**

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1 Influent Requirements

1.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
701	INFLUENT: Representative samples shall be collected from the influent channel after the fine screen and prior to the grit removal system.

1.2 Monitoring Requirements

The permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
$CBOD_5$		mg/L	3/Week	24-Hr Flow Prop Comp	
BOD_5, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Quarterly	24-Hr Flow Prop Comp	

1.2.1.1 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

2 In-Plant Requirements

2.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
103	MERCURY FIELD BLANK: The field blank shall be collected using standard handling procedures each day mercury samples are collected.

2.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

2.2.1 Sampling Point 103 - MERCURY FIELD BLANK

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Mercury, Total Recoverable		ng/L	Quarterly	Blank	

2.2.1.1 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

3 Surface Water Requirements

3.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
001	EFFLUENT: Representative 24 hr flow proportional composite samples shall be collected after the clarifiers from the collection well prior to disinfection. Grab samples shall be collected after the disinfection channel effluent weir prior to discharge to the Wisconsin River.

3.2 Monitoring Requirements and Effluent Limitations

The permittee shall comply with the following monitoring requirements and limitations.

3.2.1 Sampling Point (Outfall) 001 - EFFLUENT TO WISCONSIN RIVER

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
$CBOD_5$	Monthly Avg	25 mg/L	3/Week	24-Hr Flow Prop Comp	
$CBOD_5$	Weekly Avg	40 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Nitrogen, Ammonia Variable Limit		mg/L	2/Week	See Table	Look up the variable ammonia limit from the 'Variable Ammonia Limitation' table and report the variable limit in the Ammonia Variable Limit column on the eDMR.
Nitrogen, Ammonia (NH_3-N) Total	Daily Max - Variable	mg/L	2/Week	24-Hr Flow Prop Comp	Report the daily maximum Ammonia result in the Nitrogen, Ammonia (NH_3-N) Total column of the eDMR. See Ammonia Limitation Section.
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	108 mg/L	2/Week	24-Hr Flow Prop Comp	

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Ammonia (NH_3-N) Total	Weekly Avg	108 mg/L	2/Week	24-Hr Flow Prop Comp	
Fecal Coliform	Geometric Mean - Monthly	400 #/100 ml	2/Week	Grab	Interim limit effective May through September annually until the final E. coli limit goes into effect per the 'Effluent Limitations for E. coli' Schedule.
E. coli		#/100 ml	2/Week	Grab	Monitoring only May through September annually until the final limit goes into effect per the 'Effluent Limitations for E. coli' Schedule.
E. coli	Geometric Mean - Monthly	126 #/100 ml	2/Week	Grab	Limit effective May through September annually per the 'Effluent Limitations for E.coli' schedule.
E. coli	% Exceedance	10 Percent	2/Week	Calculated	Limit Effective May through September annually per the 'Effluent Limitations for E. coli Schedule'. See the 'E. coli Percent Limit' section below. Enter the result in the DMR on the last day of the month.
Mercury, Total Recoverable		ng/L	Quarterly	Grab	Monitoring only. See 'Mercury Monitoring' and 'Mercury - Pollutant Minimization Program' sections below.
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring only during calendar year 2028. See 'Chloride Monitoring Requirements' section in permit below.
Phosphorus, Total	Monthly Avg	0.93 mg/L	3/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	7.96 lbs/day	3/Week	Calculated	

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total		lbs/month	3/Week	Calculated	Calculate the Total Monthly Discharge of phosphorus and report on the last day of the month on the DMR. See 'TMDL Calculations' section in permit.
Phosphorus, Total		lbs/yr	3/Week	Calculated	Calculate the 12-month rolling sum of total monthly mass of phosphorus discharged and report on the last day of the month on the DMR. See permit subsection 'Total Maximum Daily Load (TMDL) Limitations for Total Phosphorus'.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	See permit subsection 'Nitrogen Series Monitoring'.
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	See permit subsection 'Nitrogen Series Monitoring'.
Nitrogen, Total		mg/L	Quarterly	Calculated	See permit subsection 'Nitrogen Series Monitoring'. Total Nitrogen = Total Kjeldahl N (mg/L) + (Nitrite + Nitrate Nitrogen) (mg/L)
PFOS		ng/L	1/ 2 Months	Grab	Monitoring only. See permit subsections 'PFOS/PFOA Sampling and Reporting Requirements' and 'PFOS/PFOA Minimization Plan Determination of Need' and permit schedule 'PFOS/PFOA Minimization Plan Determination of Need'.

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
PFOA		ng/L	1/ 2 Months	Grab	Monitoring only. See permit subsections 'PFOS/PFOA Sampling and Reporting Requirements' and 'PFOS/PFOA Minimization Plan Determination of Need' and permit schedule 'PFOS/PFOA Minimization Plan Determination of Need'.
Acute WET		TU_a	See Listed Qtr(s)	24-Hr Flow Prop Comp	See permit subsection 'Whole Effluent Toxicity (WET) Testing'.

3.2.1.1 Annual Average Design Flow

The annual average design flow of the permittee's wastewater treatment facility is 1.8 Million Gallons per Day (MGD).

3.2.1.1 Ammonia Nitrogen Daily Maximum Variable Limits

Daily maximum ammonia limits vary based on the effluent pH value. pH sampling shall occur on the same day total ammonia (NH3-N) sampling occurs and as required by the permit. Report the applicable Variable Ammonia Limit from the 'Variable Ammonia Limitations' table below on the Electronic Discharge Monitoring Report (eDMR) in the 'Nitrogen, Ammonia Variable Limit' column. Compare ammonia limits in the table to the reported ammonia result and report number of exceedances on the eDMR.
Note that pH values should be rounded to the 0.1 s.u. before using the table below. For example, if the pH field reading is 8.04, the value of 8.0 should be used.

Variable Ammonia Limitations

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
$6.0 < pH \leq 6.1$	108	$7.0 < pH \leq 7.1$	66	$8.0 < pH \leq 8.1$	14
$6.1 < pH \leq 6.2$	106	$7.1 < pH \leq 7.2$	59	$8.1 < pH \leq 8.2$	11
$6.2 < pH \leq 6.3$	104	$7.2 < pH \leq 7.3$	52	$8.2 < pH \leq 8.3$	9.4
$6.3 < pH \leq 6.4$	101	$7.3 < pH \leq 7.4$	46	$8.3 < pH \leq 8.4$	7.8
$6.4 < pH \leq 6.5$	98	$7.4 < pH \leq 7.5$	40	$8.4 < pH \leq 8.5$	6.4
$6.5 < pH \leq 6.6$	94	$7.5 < pH \leq 7.6$	34	$8.5 < pH \leq 8.6$	5.3
$6.6 < pH \leq 6.7$	89	$7.6 < pH \leq 7.7$	29	$8.6 < pH \leq 8.7$	4.4
$6.7 < pH \leq 6.8$	84	$7.7 < pH \leq 7.8$	24	$8.7 < pH \leq 8.8$	3.7
$6.8 < pH \leq 6.9$	78	$7.8 < pH \leq 7.9$	20	$8.8 < pH \leq 8.9$	3.1
$6.9 < pH \leq 7.0$	72	$7.9 < pH \leq 8.0$	17	$8.9 < pH \leq 9.0$	2.6

3.2.1.2 *E. coli* Percent Limit

No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 #/100 ml. Bacteria samples may be collected more frequently than required. All samples shall be reported on the monthly discharge monitoring reports (DMRs). The following calculation should be used to calculate percent exceedances.

$$\frac{\#\ of\ Samples\ greater\ than\ 410\ \#/100\ ml}{Total\ \#\ of\ samples} \times 100 = \%\ Exceedance$$

3.2.1.3 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of sss. NR 106.145(9) and (10), Wis. Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

3.2.1.4 Mercury – Pollutant Minimization Program

The permittee shall continue to implement a mercury pollutant minimization program to maintain effluent quality at or below the current effluent concentrations. The mercury pollutant minimization program shall be available for Department review upon request. The Department may request that the permittee prepare a summary of the permittee's program at the time of application for reissuance of the WPDES permit.

3.2.1.5 Chloride Monitoring Requirements

Monthly chloride monitoring only is required in **calendar year 2028**. If the wastewater treatment facility accepts high strength brine wastes at least four of the monthly samples shall be collected when the facility is accepting and processing the high strength brine.

3.2.1.6 Total Maximum Daily Load (TMDL) Limitations

The Wisconsin River Basin TMDL for total phosphorus was approved by the U.S. Environmental Protection Agency on April 26, 2019. Additional Site-Specific Criteria (SSC) for Lakes Petenwell, Castle Rock, and Wisconsin and the related Waste Load Allocation (WLA) included in Appendix K of the TMDL report were adopted by rule in s. NR 102.06 (7), Wis. Adm. Code, on June 1, 2020, and approved by the U.S. Environmental Protection Agency on July 9, 2020. The permittee's approved SSC-based WLA is 2007 lbs/yr, and results in calculated phosphorus mass limits of 7.96 lbs/day expressed as a monthly average. The 12-month rolling sum of total monthly phosphorus (lbs/yr) shall be reported each month for direct comparison to the facility's WLA.

Effluent results shall be calculated as follows:

Total Monthly Discharge (lbs/month): = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34.

12-Month Rolling Sum of Total Monthly Discharge (lbs/yr): =the sum of the most recent 12 consecutive months of Total Monthly Discharges.

3.2.1.7 Nitrogen Series Monitoring

Monitoring for Total Kjeldahl Nitrogen (TKN), Nitrite + Nitrate Nitrogen, and Total Nitrogen shall be conducted once each year in rotating quarters in order to collect seasonal information about the discharge. Tests are required quarterly.
Testing: Monitoring shall be performed during normal operating conditions. Permittees are not allowed to turn off or otherwise modify treatment systems, production processes, or change other operating or treatment conditions during testing.

3.2.1.8 PFOS/PFOA Sampling and Reporting Requirements

For grab samples, as defined per s. NR 218.04(10), Wis. Adm. Code, a single sample at a location as defined by the sample point description shall be taken during the time of the day most representative to capture all potential discharges. If extra equipment besides the sample bottle is used to collect the sample, it is recommended that a one-time equipment blank is collected with the first sample. An equipment blank would be collected by passing laboratory-verified PFAS-free water over or through field sampling equipment before the collection of a grab sample to evaluate potential contamination from the equipment used during sample.
If any equipment blanks are performed, these results shall be reported in the comments section of the eDMR and shall also documented in the reports submitted as part of the PFOS/PFOA Minimization Plan Determination of Need schedule of the permit.

3.2.1.9 PFOS/PFOA Minimization Plan Determination of Need

The permittee shall monitor PFOS and PFOA as specified in the table above and report on the effluent concentrations including trends in monthly and annual average PFOS and PFOA concentrations as specified in the PFOS/PFOA Minimization Plan Determination of Need Schedule.
If, after reviewing the data, the Department determines that a minimization plan for PFOS and PFOA is necessary based on the procedures in s. NR 106.98(4), Wis. Adm. Code, the Department will notify the permittee in writing that a PFOS and PFOA minimization plan that satisfies the requirements in s. NR 106.99, Wis. Adm. Code, is required. The permittee shall submit an initial plan for Department approval no later than 90 days after written notification was sent from the Department in accordance with s. NR 106.985(2)(a), Wis. Adm. Code. Pursuant to s. NR 106.985(2)(b), Wis. Adm. Code, as soon as possible after Department approval of the PFOS and PFOA minimization plan, the Department will modify or revoke and reissue the permit in accordance with public notice procedures under ch. 283, Wis. Stats., and ch. NR 203, Wis. Adm. Code, to include the PFOS and PFOA minimization plan and other related terms and condition.
If, however, the Department determines that a PFOS and PFOA minimization plan is unnecessary based on the procedures in s. NR 106.98(4), Wis. Adm. Code, the Department shall notify the permittee that no further action is required. Per s. NR 106.98(3)(a), Wis. Adm. Code, the Department may reduce monitoring frequency to once every 3 months (quarterly) on a case-by-case basis, but only after at least 12 representative results have been generated. If the permittee requests a reduction in monitoring and the Department agrees a reduction would be appropriate, the permit may be modified in accordance with public notice procedures under ch. 283, Wis. Stats., and ch. NR 203, Wis. Adm. Code, to incorporate this change.

3.2.1.10 Whole Effluent Toxicity (WET) Testing

Primary Control Water: Receiving water Wisconsin River
Instream Waste Concentration (IWC): 100%
Dilution series: At least five effluent concentrations and dual controls must be included in each test.
• **Acute:** 100, 50, 25, 12.5, 6.25% and any additional selected by the permittee.

WET Testing Frequency:
Acute tests are required during the following quarters:
July – September 2025, October – December 2026, January – March 2027, April – June 2028, July – September 2029

Acute WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the last full calendar year of this permit. For example, the next test would be required in July – September 2030.

Testing: WET testing shall be performed during normal operating conditions. Permittees are not allowed to turn off or otherwise modify treatment systems, production processes, or change other operating or treatment conditions during WET tests.

Reporting: The permittee shall report test results on the Discharge Monitoring Report form, and also complete the "Whole Effluent Toxicity Test Report Form" (Section 6, "*State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition*"), for each test. The original, complete, signed version of the Whole Effluent Toxicity Test Report Form shall be sent to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The Discharge Monitoring Report (DMR) form shall be submitted electronically by the required deadline.

Determination of Positive Results: An acute toxicity test shall be considered positive if the Toxic Unit - Acute (TU_a) is greater than 1.0 for either species. The TU_a shall be calculated as follows: $TU_a = 100 \div LC_{50}$.

Additional Testing Requirements: Within 90 days of a test which showed positive results, the permittee shall submit the results of at least 2 retests to the Biomonitoring Coordinator on "Whole Effluent Toxicity Test Report Forms". The 90-day reporting period shall begin the day after the test which showed a positive result. The retests shall be completed using the same species and test methods specified for the original test (see the Standard Requirements section herein).

4 Land Application Requirements

4.1 Sampling Point(s)

The discharge(s) shall be limited to land application of the waste type(s) designated for the listed sampling point(s) on Department approved land spreading sites or by hauling to another facility.

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
002	MUNICIPAL SLUDGE: Representative sludge samples shall be collected from the cake storage and prior to land application.

4.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

4.2.1 Sampling Point (Outfall) 002 - SLUDGE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Quarterly	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Quarterly	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Quarterly	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Quarterly	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Quarterly	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Quarterly	Composite	
Nitrogen, Total Kjeldahl	Ceiling	57 mg/kg	Quarterly	Composite	
Nitrogen, Total Kjeldahl	High Quality	17 mg/kg	Quarterly	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Quarterly	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Quarterly	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Quarterly	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Quarterly	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Quarterly	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Quarterly	Composite	
Nitrogen, Total Kjeldahl		Percent	Quarterly	Composite	
Nitrogen, Ammonium (NH_4-N) Total		Percent	Quarterly	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total		Percent	Quarterly	Composite	
Phosphorus, Water Extractable		% of Tot P	Quarterly	Composite	
Potassium, Total Recoverable		Percent	Quarterly	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once during calendar year 2026. See 'Sludge Analysis for PCBs' section in permit.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once during calendar year 2026. See 'Sludge Analysis for PCBs' section in permit.
PFOA + PFOS		µg/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Other Sludge Requirements	
Sludge Requirements	**Sample Frequency**
List 3 Requirements – Pathogen Control: The requirements in List 3 shall be met prior to land application of sludge.	**Annual**
List 4 Requirements – Vector Attraction Reduction: The vector attraction reduction shall be satisfied prior to, or at the time of land application as specified in List 4.	**Annual**

4.2.1.1 List 2 Analysis

If the monitoring frequency for List 2 parameters is more frequent than "Annual" then the sludge may be analyzed for the List 2 parameters just prior to each land application season rather than at the more frequent interval specified.

4.2.1.2 Changes in Feed Sludge Characteristics

If a change in feed sludge characteristics, treatment process, or operational procedures occurs which may result in a significant shift in sludge characteristics, the permittee shall reanalyze the sludge for List 1, 2, 3 and 4 parameters each time such change occurs.

4.2.1.3 Multiple Sludge Sample Points (Outfalls)

If there are multiple sludge sample points (outfalls), but the sludges are not subject to different sludge treatment processes, then a separate List 2 analysis shall be conducted for each sludge type which is land applied, just prior to

land application, and the application rate shall be calculated for each sludge type. In this case, List 1, 3, and 4 and PCBs need only be analyzed on a single sludge type, at the specified frequency. If there are multiple sludge sample points (outfalls), due to multiple treatment processes, List 1, 2, 3 and 4 and PCBs shall be analyzed for each sludge type at the specified frequency.

4.2.1.4 Sludge Which Exceeds the High Quality Limit

Cumulative pollutant loading records shall be kept for all bulk land application of sludge which does not meet the high quality limit for any parameter. This requirement applies for the entire calendar year in which any exceedance of Table 3 of s. NR 204.07(5)(c), is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied in that calendar year. The formula to be used for calculating cumulative loading is as follows:

[(Pollutant concentration (mg/kg) x dry tons applied/ac) ÷ 500] + previous loading (lbs/acre) = cumulative lbs pollutant per acre

When a site reaches 90% of the allowable cumulative loading for any metal established in Table 2 of s. NR 204.07(5)(b), the Department shall be so notified through letter or in the comment section of the annual land application report (3400-55).

4.2.1.5 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs one time during **calendar year 2026**. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code and the conditions specified in Standard Requirements of this permit. PCB results shall be submitted by January 31, following the specified year of analysis.

4.2.1.6 Sludge Monitoring for PFAS

Sampling shall occur for perfluoroalkyl and polyfluoroalkyl compounds (PFAS) listed in the table below and as indicated in sampling point sections above. Monitoring shall occur at each sample point when sludge is generated regardless of the end use (i.e. land applied, hauled to another facility, landfilled).

PERFLUOROALKYLCARBOXILIC Acids (PFCAs)	
PFBA	Perfluorobutanoic acid
PFPeA	Perfluroropentanoic acid
PFHxA	Perfluorohexanoic acid
PFHpA	Perfluoroheptanoic acid
PFOA	Perfluorooctanoic acid
PFNA	Perfluorononanoic acid
PFDA	Perfluorodecanoic acid
PFUnA	Perfluroroundecanoic acid
PFDoA	Perfluorododecanoic acid
PFTriA	Perfluorotridecanoic acid
PFTeDA	Perfluorotetradecanoic acid
PERFLUOROALKYLSULFONIC Acids (PFSAs)	
PFBS	Perfluorobutane sulfonic acid
PFPeS	Perfluroropentane sulfonic acid
PFHxS	Perfluorohexane sulfonic acid

PFHpS	Perfluoroheptane sulfonic acid
PFOS	Perfluorooctane sulfonic acid
PFNS	Perfluorononane sulfonic acid
PFDS	Perfluorodecane sulfonic acid
PFDoS	Perfluorododecane sulfonic acid
TELOMER SULFONIC Acids	
4:2 FTSA	4:2 fluorotelomersulfonic acid
6:2 FTSA	6:2 fluorotelomersulfonic acid
8:2 FTSA	8:2 fluorotelomersulfonic acid
PERFLUOROOCTANCESULFONAMIDES (FOSAs)	
PFOSA	Perfluroroctane sulfonamide
N-MeFOSA	N-Methyl perfluoroocatane sulfonamide
N-EtFOSA	N-Ethyl perfluorooctane sulfonamide
PERFLUOROOCTANCESULFONAMIDOACETIC Acids	
N-MeFOSAA	N-Methyl perfluoroocatane sulfonamidoacetic acid
N-EtFOSAA	N-Ethyl perfluorooctane sulfonamidoacetic acid
NATIVE PERFLUOROOCTANCESULFONAMIDOETHANOLS (FOSEs)	
N-MeFOSE	N-Methyl perfluorooctane sulfonamideoethanol
N-EtFOSE	N-Ethyl perfluorooctane sulfonamidoethanol
PERFLUOROALKYLETHERCARBOXYLIC Acids (PFECAs)	
HFPO-DA	Hexafluoropropylene oxide dimer acid
DONA	4,8-dioxa-3H-perfluorononanoic acid
CHLORO-PERFLUOROALKYLSULFONATE	
F-53B Major	9-chloroehexadecafluoro-3-oxanone-1-sulfonic acid
F-53B Minor	11-chloroelcosafluoro-3-oxaundecane-1-sulfonic acid

Note: If WDNR Lab Certification removes a particular compound from the reporting list above and upon receiving written communication from the department, reporting for that compound is no longer required.

4.2.1.7 Sampling and Reporting Sludge Samples for PFAS

Representative sludge samples shall be collected at each sample point as listed. At minimum, liquid sludge storage/digesters should be thoroughly mixed prior to sampling. Cake sludge samples should consist of seven equal size discrete samples and be collected from different areas and depths then composited into one sample for laboratory analysis.

Note: If additional equipment is used for collecting sludge samples (i.e., shovels, compositing buckets, bottles, etc.), then a one-time equipment blank is recommended to be collected with the first sample. An equipment blank sample is collected by passing laboratory verified PFAS-free water over or through field sampling equipment before the collection of a representative sludge sample. The equipment blank result shall be reported on the annual Sludge Characteristics Form (3400-049) in the comment section when reporting PFAS concentrations in the sludge.

The permittee shall report each of the PFAS sludge monitoring results on the annual Sludge Characteristics and Monitoring Form (3400-049) as provided by the department. The permittee shall also report the summation of PFOS and PFOA on this same form. All results shall be reported in dry weight. The annual Sludge Characteristics and Monitoring Form (3400-049) are due January 31, of the year following the collection of the sludge samples.

The laboratory performing the analysis on any samples shall be certified for the applicable PFAS compounds in the solids matrix by the Wisconsin Laboratory Certification Program established under s. 299.11, Wis. Stats., and in accordance with s. NR 149.41, Wis. Adm. Code. If the EPA Office of Water publishes a 1600 series isotope dilution method for the analysis of PFAS in solids, the department recommends the use of the EPA method. The department may reject any sample results if results are produced by a laboratory that is not in compliance with certification requirements under ch. NR 149, Wis. Adm. Code.

4.2.1.8 PFAS Land Application Requirements

The department recommends the landspreading and/or land application of sludge be done in a manner consistent with the most recent version of the "Interim Strategy for Land Application of Biosolids and Industrial Sludges containing PFAS".

4.2.1.9 Lists 1, 2, 3, and 4

List 1 **TOTAL SOLIDS AND METALS** See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters
Solids, Total (percent)
Arsenic, mg/kg (dry weight)
Cadmium, mg/kg (dry weight)
Copper, mg/kg (dry weight)
Lead, mg/kg (dry weight)
Mercury, mg/kg (dry weight)
Molybdenum, mg/kg (dry weight)
Nickel, mg/kg (dry weight)
Selenium, mg/kg (dry weight)
Zinc, mg/kg (dry weight)

List 2 **NUTRIENTS** See the Monitoring Requirements and Limitations table above for monitoring frequency for the List 2 parameters
Solids, Total (percent)
Nitrogen Total Kjeldahl (percent)
Nitrogen Ammonium (NH4-N) Total (percent)
Phosphorus Total as P (percent)
Phosphorus, Water Extractable (as percent of Total P)
Potassium Total Recoverable (percent)

List 3
PATHOGEN CONTROL FOR CLASS B SLUDGE

The permittee shall implement pathogen control as listed in List 3. The Department shall be notified of the pathogen control utilized and shall be notified when the permittee decides to utilize alternative pathogen control.

The following requirements shall be met prior to land application of sludge.

Parameter	Unit	Limit
Fecal Coliform*	MPN/gTS or CFU/gTS	2,000,000
OR, ONE OF THE FOLLOWING PROCESS OPTIONS		
Aerobic Digestion	Air Drying	
Anaerobic Digestion	Composting	
Alkaline Stabilization	PSRP Equivalent Process	

***** The Fecal Coliform limit shall be reported as the geometric mean of 7 discrete samples on a dry weight basis.

List 4
VECTOR ATTRACTION REDUCTION

The permittee shall implement any one of the vector attraction reduction options specified in List 4. The Department shall be notified of the option utilized and shall be notified when the permittee decides to utilize an alternative option.

One of the following shall be satisfied prior to, or at the time of land application as specified in List 4.

Option	Limit	Where/When it Shall be Met
Volatile Solids Reduction	≥38%	Across the process
Specific Oxygen Uptake Rate	≤1.5 mg O_2/hr/g TS	On aerobic stabilized sludge
Anaerobic bench-scale test	<17 % VS reduction	On anaerobic digested sludge
Aerobic bench-scale test	<15 % VS reduction	On aerobic digested sludge
Aerobic Process	>14 days, Temp >40°C and Avg. Temp > 45°C	On composted sludge
pH adjustment	>12 S.U. (for 2 hours) and >11.5 (for an additional 22 hours)	During the process
Drying without primary solids	>75 % TS	When applied or bagged
Drying with primary solids	>90 % TS	When applied or bagged
Equivalent Process	Approved by the Department	Varies with process
Injection	-	When applied
Incorporation	-	Within 6 hours of application

4.2.1.10 Daily Land Application Log

Daily Land Application Log		
Discharge Monitoring Requirements and Limitations The permittee shall maintain a daily land application log for biosolids land applied each day when land application occurs. The following minimum records must be kept, in addition to all analytical results for the biosolids land applied. The log book records shall form the basis for the annual land application report requirements**.**		
Parameters	**Units**	**Sample Frequency**
DNR Site Number(s)	Number	Daily as used
Outfall number applied	Number	Daily as used
Acres applied	Acres	Daily as used
Amount applied	As appropriate * /day	Daily as used
Application rate per acre	unit */acre	Daily as used
Nitrogen applied per acre	lb/acre	Daily as used
Method of Application	Injection, Incorporation, or surface applied	Daily as used

*gallons, cubic yards, dry US Tons or dry Metric Tons

5 Schedules

5.1 Effluent Limitations for E. coli

The permittee shall comply with surface water limitations for E. coli as specified. No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification

Required Action	Due Date
Status Update: The permittee shall submit information within the discharge monitoring report (DMR) comment section documenting the steps taken in preparation for properly monitoring and testing for E. coli including, but not limited to, selected test method and location of sampling.	02/21/2025
Operational Evaluation Report: The permittee shall prepare and submit an Operational Evaluation Report to the Department for review and approval. The report shall include an evaluation of collected effluent data and proposed operational improvements that will optimize efficacy of disinfection at the treatment plant during the period prior to complying with final E. coli limitations and, to the extent possible, enable compliance with the final E. coli limitations. The report shall include a plan and schedule for implementation of the operational improvements. These improvements shall occur as soon as possible, but not later than April 30, 2026. The report shall state whether the operational improvements are expected to result in compliance with the final E. coli limitations. The permittee shall implement the operational improvements in accordance with the approved plan and schedule specified in the Operational Evaluation Report and in no case later than April 30, 2026. If the Operational Evaluation Report concludes that the operational improvements are expected to result in compliance with the final E. coli limitations, the permittee shall comply with the final E. coli limitations by April 30, 2026 and the permittee is not required to comply with subsequent milestones identified below in this compliance schedule (‘Submit Facility Plan’, 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet Limitations', ‘Construction Upgrade Progress Report’, 'Complete Construction', 'Achieve Compliance'). FACILITY PLAN - If the Operational Evaluation Report concludes that operational improvements alone are not expected to result in compliance with the final E. coli limitations, the permittee shall initiate development of a facility plan for meeting final E. coli limitations and comply with the remaining required actions in this schedule of compliance. If the Department disagrees with the conclusion of the report and determines that the permittee can achieve final E. coli limitations using the existing treatment system with only operational improvements, the Department may reopen and modify the permit to include an implementation schedule for achieving the final E. coli limitations sooner than April 30, 2029.	11/30/2025
Submit Facility Plan: If the Operational Evaluation Report concluded that the permittee cannot achieve final E. coli limitations with operational improvements alone, the permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.	04/30/2026
Final Plans and Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant upgrades that must be constructed to achieve compliance with final E. coli limitations and a schedule for completing construction of the upgrades by the complete construction date specified below.	03/31/2027
Treatment Plant Upgrade to Meet Limitations: The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of the final construction plans	09/30/2027

and schedule from the Department pursuant to s. 281.41. Stats., prior to initiating activities defined as construction under ch. NR 108, Wis. Adm. Code. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.	
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	09/30/2028
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades.	03/31/2029
Achieve Compliance: The permittee shall achieve compliance with final E. coli limitations.	04/30/2029

5.2 PFOS/PFOA Minimization Plan Determination of Need

Required Action	Due Date
Report on Effluent Discharge: Submit a report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations. This analysis should also include a comparison to the applicable narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code. This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results.	12/31/2025
Report on Effluent Discharge and Evaluation of Need: Submit a final report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations of data collected over the last 24 months. The report shall also provide a comparison on the likelihood of the facility needing to develop a PFOS/PFOA minimization plan. This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results. The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan. If the Department determines a PFOS/PFOA minimization plan is needed based on a reasonable potential evaluation, the permittee will be required to develop a minimization plan for Department approval no later than 90 days after written notification was sent from the Department. The Department will modify or revoke and reissue the permit to include PFOS/PFOA minimization plan reporting requirements along with a schedule of compliance to meet WQBELs. Effluent monitoring of PFOS and PFOA shall continue as specified in the permit until the modified permit is issued. If, however, the Department determines there is no reasonable potential for the facility to discharge PFOS or PFOA above the narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code, no further action is required and effluent monitoring of PFOS and PFOA shall continue as specified in the permit.	12/31/2026

6 Standard Requirements

Chapter NR 205, Wisconsin Administrative Code: The conditions in ss. NR 205.07(1) and NR 205.07(2), Wis. Adm. Code, are included by reference in this permit. The permittee shall comply with all of these requirements. Some of these requirements are outlined in the Standard Requirements section of this permit. Requirements not specifically outlined in the Standard Requirement section of this permit can be found in ss. NR 205.07(1) and NR 205.07(2), Wis. Adm. Code.

6.1 Reporting and Monitoring Requirements

6.1.1 Monitoring Results

Monitoring results obtained during the previous month shall be summarized and reported on a Department Wastewater Discharge Monitoring Report. The report may require reporting of any or all of the information specified below under 'Recording of Results'. This report is to be returned to the Department no later than the date indicated on the form. A copy of the Wastewater Discharge Monitoring Report Form or an electronic file of the report shall be retained by the permittee.

Monitoring results shall be reported on an electronic discharge monitoring report (eDMR). The eDMR shall be certified electronically by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

If the permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included on the Wastewater Discharge Monitoring Report.

The permittee shall comply with all limits for each parameter regardless of monitoring frequency. For example, monthly, weekly, and/or daily limits shall be met even with monthly monitoring. The permittee may monitor more frequently than required for any parameter.

6.1.2 Sampling and Testing Procedures

Sampling and laboratory testing procedures shall be performed in accordance with Chapters NR 218 and NR 219, Wis. Adm. Code, and completed by a laboratory certified or registered in accordance with the requirements of ch. NR 149, Wis. Adm. Code. Groundwater sampling shall be performed in accordance with procedures contained in s. NR 140.16, Wis. Adm. Code, and the WDNR publications, Groundwater Sampling Desk Reference (PUBL-DG-037-96) and Groundwater Sampling Field Manual (PUBL-DG-038-96). The analytical methodologies used shall enable the laboratory to quantitate all substances for which monitoring is required at levels below the effluent limitation and/or groundwater standard. If the required level cannot be met by any of the methods available in ch. NR 219, Wis. Adm. Code, then the method with the lowest limit of detection shall be selected. Additional test procedures may be specified in this permit.

6.1.3 Recording of Results

The permittee shall maintain records which provide the following information for each effluent measurement or sample taken:

- the date, exact place, method and time of sampling or measurements;
- the individual who performed the sampling or measurements;
- the date the analysis was performed;
- the individual who performed the analysis;
- the analytical techniques or methods used; and
- the results of the analysis.

6.1.4 Reporting of Monitoring Results

The permittee shall use the following conventions when reporting effluent monitoring results:

- Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 0.1 mg/L, report the pollutant concentration as < 0.1 mg/L.
- Pollutant concentrations equal to or greater than the limit of detection, but less than the limit of quantitation, shall be reported and the limit of quantitation shall be specified.
- For purposes of calculating fees under ch. NR 101, Wis. Adm. Code, a reporting limit of 2.0 mg/L for BOD_5 and 2.5 mg/L Total Suspended Solids shall be considered to be limits of quantitation.
- For the purposes of reporting a calculated result, average or a mass discharge value, the permittee may substitute a "0" (zero) for any pollutant concentration that is less than the limit of detection. However, if the effluent limitation is less than the limit of detection, the department may substitute a value other than zero for results less than the limit of detection, after considering the number of monitoring results that are greater than the limit of detection and if warranted when applying appropriate statistical techniques.
- If no discharge occurs through an outfall, flow related parameters (e.g. flow rate, hydraulic application rate, volume, etc.) should be reported as "0" (zero) at the required sample frequency specified for the outfall. For example: if the sample frequency is daily, "0" would be reported for any day during the month that no discharge occurred.

6.1.5 Compliance Maintenance Annual Reports

Compliance Maintenance Annual Reports (CMAR) shall be completed using information obtained over each calendar year regarding the wastewater conveyance and treatment system. The CMAR shall be submitted and certified by the permittee in accordance with ch. NR 208, Wis. Adm. Code, by June 30, each year on an electronic report form provided by the Department.

In the case of a publicly owned treatment works, a resolution shall be passed by the governing body and submitted as part of the CMAR, verifying its review of the report and providing responses as required. Private owners of wastewater treatment works are not required to pass a resolution; but they must provide an Owner Statement and responses as required, as part of the CMAR submittal.

The CMAR shall be certified electronically by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The certification verifies that the electronic report is true, accurate and complete.

6.1.6 Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings or electronic data records for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report or application. All pertinent sludge information, including permit application information and other documents specified in this permit or s. NR 204.06(9), Wis. Adm. Code shall be retained for a minimum of 5 years.

6.1.7 Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or correct information to the Department.

6.1.8 Reporting Requirements – Alterations or Additions

The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:

- The alteration or addition to the permitted facility may meet one of the criteria for determining whether a facility is a new source.
- The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification requirement applies to pollutants which are not subject to effluent limitations in the existing permit.
- The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use of disposal sites not reported during the permit application process nor reported pursuant to an approved land application plan. Additional sites may not be used for the land application of sludge until department approval is received.

6.2 System Operating Requirements

6.2.1 Noncompliance Reporting

Sanitary sewer overflows and sewage treatment facility overflows shall be reported according to the 'Sanitary Sewer Overflows and Sewage Treatment Facility Overflows' section of this permit.
The permittee shall report the following types of noncompliance by a telephone call to the Department's regional office within 24 hours after becoming aware of the noncompliance:

- any noncompliance which may endanger health or the environment;
- any violation of an effluent limitation resulting from a bypass;
- any violation of an effluent limitation resulting from an upset; and
- any violation of a maximum discharge limitation for any of the pollutants listed by the Department in the permit, either for effluent or sludge.

A written report describing the noncompliance shall also be submitted to the Department's regional office within 5 days after the permittee becomes aware of the noncompliance. On a case-by-case basis, the Department may waive the requirement for submittal of a written report within 5 days and instruct the permittee to submit the written report with the next regularly scheduled monitoring report. In either case, the written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.
A scheduled bypass approved by the Department under the 'Scheduled Bypass' section of this permit shall not be subject to the reporting required under this section.
NOTE: Section 292.11(2)(a), Wisconsin Statutes, requires any person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance to notify the Department of Natural Resources immediately of any discharge not authorized by the permit. **The discharge of a hazardous substance that is not authorized by this permit or that violates this permit may be a hazardous substance spill. To report a hazardous substance spill, call DNR's 24-hour HOTLINE at 1-800-943-0003.**

6.2.2 Flow Meters

Flow meters shall be calibrated annually, as per s. NR 218.06, Wis. Adm. Code.

6.2.3 Raw Grit and Screenings

All raw grit and screenings shall be disposed of at a properly licensed solid waste facility or picked up by a licensed waste hauler. If the facility or hauler are located in Wisconsin, then they shall be licensed under chs. NR 500-555, Wis. Adm. Code.

6.2.4 Sludge Management

All sludge management activities shall be conducted in compliance with ch. NR 204 "Domestic Sewage Sludge Management", Wis. Adm. Code.

6.2.5 Prohibited Wastes

Under no circumstances may the introduction of wastes prohibited by s. NR 211.10, Wis. Adm. Code, be allowed into the waste treatment system. Prohibited wastes include those:

- which create a fire or explosion hazard in the treatment work;
- which will cause corrosive structural damage to the treatment work;
- solid or viscous substances in amounts which cause obstructions to the flow in sewers or interference with the proper operation of the treatment work;
- wastewaters at a flow rate or pollutant loading which are excessive over relatively short time periods so as to cause a loss of treatment efficiency; and
- changes in discharge volume or composition from contributing industries which overload the treatment works or cause a loss of treatment efficiency.

6.2.6 Bypass

This condition applies only to bypassing at a sewage treatment facility that is not a scheduled bypass, approved blending as a specific condition of this permit, a sewage treatment facility overflow or a controlled diversion as provided in the sections titled ‘Scheduled Bypass’, ‘Blending’ (if approved), ‘SSO’s and Sewage Treatment Facility Overflows’ and ‘Controlled Diversions’ of this permit. Any other bypass at the sewage treatment facility is prohibited and the Department may take enforcement action against a permittee for such occurrences under s. 283.89, Wis. Stats. The Department may approve a bypass if the permittee demonstrates all the following conditions apply:

- The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance. When evaluating feasibility of alternatives, the department may consider factors such as technical achievability, costs and affordability of implementation and risks to public health, the environment and, where the permittee is a municipality, the welfare of the community served; and
- The bypass was reported in accordance with the Noncompliance Reporting section of this permit.

6.2.7 Scheduled Bypass

Whenever the permittee anticipates the need to bypass for purposes of efficient operations and maintenance and the permittee may not meet the conditions for controlled diversions in the ‘Controlled Diversions’ section of this permit, the permittee shall obtain prior written approval from the Department for the scheduled bypass. A permittee’s written request for Department approval of a scheduled bypass shall demonstrate that the conditions for bypassing specified in the above section titled ‘Bypass’ are met and include the proposed date and reason for the bypass, estimated volume and duration of the bypass, alternatives to bypassing and measures to mitigate environmental harm caused by the bypass. The department may require the permittee to provide public notification for a scheduled bypass if it is determined there is significant public interest in the proposed action and may recommend mitigation measures to minimize the impact of such bypass.

6.2.8 Controlled Diversions

Controlled diversions are allowed only when necessary for essential maintenance to assure efficient operation. Sewage treatment facilities that have multiple treatment units to treat variable or seasonal loading conditions may shut down redundant treatment units when necessary for efficient operation. The following requirements shall be met during controlled diversions:

- Effluent from the sewage treatment facility shall meet the effluent limitations established in the permit. Wastewater that is diverted around a treatment unit or treatment process during a controlled diversion shall be recombined with wastewater that is not diverted prior to the effluent sampling location and prior to effluent discharge;
- A controlled diversion does not include blending as defined in s. NR 210.03(2e), Wis. Adm. Code, and as may only be approved under s. NR 210.12, Wis. Adm. Code. A controlled diversion may not occur during periods of excessive flow or other abnormal wastewater characteristics;
- A controlled diversion may not result in a wastewater treatment facility overflow; and
- All instances of controlled diversions shall be documented in sewage treatment facility records and such records shall be available to the department on request.

6.2.9 Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training as required in ch. NR 114, Wis. Adm. Code, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

6.2.10 Operator Certification

The wastewater treatment facility shall be under the direct supervision of a state certified operator. In accordance with s. NR 114.53, Wis. Adm. Code, every WPDES permitted treatment plant shall have a designated operator-in-charge holding a current and valid certificate. The designated operator-in-charge shall be certified at the level and in all subclasses of the treatment plant, except laboratory. Treatment plant owners shall notify the department of any changes in the operator-in-charge within 30 days. Note that s. NR 114.52(22), Wis. Adm. Code, lists types of facilities that are excluded from operator certification requirements (i.e. private sewage systems, pretreatment facilities discharging to public sewers, industrial wastewater treatment that consists solely of land disposal, agricultural digesters and concentrated aquatic production facilities with no biological treatment).

6.3 Sewage Collection Systems

6.3.1 Sanitary Sewage Overflows and Sewage Treatment Facility Overflows

6.3.1.1 Overflows Prohibited

Any overflow or discharge of wastewater from the sewage collection system or at the sewage treatment facility, other than from permitted outfalls, is prohibited. The permittee shall provide information on whether any of the following conditions existed when an overflow occurred:

- The sanitary sewer overflow or sewage treatment facility overflow was unavoidable to prevent loss of life, personal injury or severe property damage;
- There were no feasible alternatives to the sanitary sewer overflow or sewage treatment facility overflow such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or preventive maintenance activities;
- The sanitary sewer overflow or the sewage treatment facility overflow was caused by unusual or severe weather-related conditions such as large or successive precipitation events, snowmelt, saturated soil

conditions, or severe weather occurring in the area served by the sewage collection system or sewage treatment facility; and

- The sanitary sewer overflow or the sewage treatment facility overflow was unintentional, temporary, and caused by an accident or other factors beyond the reasonable control of the permittee.

6.3.1.2 Permittee Response to Overflows

Whenever a sanitary sewer overflow or sewage treatment facility overflow occurs, the permittee shall take all feasible steps to control or limit the volume of untreated or partially treated wastewater discharged, and terminate the discharge as soon as practicable. Remedial actions, including those in s. NR 210.21 (3), Wis. Adm. Code, shall be implemented consistent with an emergency response plan developed under the CMOM program.

6.3.1.3 Permittee Reporting

Permittees shall report all sanitary sewer overflows and sewage treatment overflows as follows:

- The permittee shall notify the department by telephone, fax or email as soon as practicable, but no later than 24 hours from the time the permittee becomes aware of the overflow;
- The permittee shall, no later than five days from the time the permittee becomes aware of the overflow, provide to the department the information identified in this paragraph using department form number 3400-184. If an overflow lasts for more than five days, an initial report shall be submitted within 5 days as required in this paragraph and an updated report submitted following cessation of the overflow. At a minimum, the following information shall be included in the report:
    - The date and location of the overflow;
    - The surface water to which the discharge occurred, if any;
    - The duration of the overflow and an estimate of the volume of the overflow;
    - A description of the sewer system or treatment facility component from which the discharge occurred such as manhole, lift station, constructed overflow pipe, or crack or other opening in a pipe;
    - The estimated date and time when the overflow began and stopped or will be stopped;
    - The cause or suspected cause of the overflow including, if appropriate, precipitation, runoff conditions, areas of flooding, soil moisture and other relevant information;
    - Steps taken or planned to reduce, eliminate and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
    - A description of the actual or potential for human exposure and contact with the wastewater from the overflow;
    - Steps taken or planned to mitigate the impacts of the overflow and a schedule of major milestones for those steps;
    - To the extent known at the time of reporting, the number and location of building backups caused by excessive flow or other hydraulic constraints in the sewage collection system that occurred concurrently with the sanitary sewer overflow and that were within the same area of the sewage collection system as the sanitary sewer overflow; and
    - The reason the overflow occurred or explanation of other contributing circumstances that resulted in the overflow event. This includes any information available including whether the overflow was unavoidable to prevent loss of life, personal injury, or severe property damage and whether there were feasible alternatives to the overflow.

  NOTE: A copy of form 3400-184 for reporting sanitary sewer overflows and sewage treatment facility overflows may be obtained from the department or accessed on the department's web site at http://dnr.wi.gov/topic/wastewater/SSOreport.html. As indicated on the form, additional information may be submitted to supplement the information required by the form.

- The permittee shall identify each specific location and each day on which a sanitary sewer overflow or sewage treatment facility overflow occurs as a discrete sanitary sewer overflow or sewage treatment facility overflow occurrence. An occurrence may be more than one day if the circumstances causing the sanitary sewer overflow or sewage treatment facility overflow results in a discharge duration of greater than 24 hours. If there is a stop and restart of the overflow at the same location within 24 hours and the overflow is caused by the same circumstance, it may be reported as one occurrence. Sanitary sewer overflow occurrences at a specific location that are separated by more than 24 hours shall be reported as separate occurrences; and
- A permittee that is required to submit wastewater discharge monitoring reports under s. NR 205.07 (1) (r), Wis. Adm. Code, shall also report all sanitary sewer overflows and sewage treatment facility overflows on that report.

6.3.1.4 Public Notification

The permittee shall notify the public of any sanitary sewer and sewage treatment facility overflows consistent with its emergency response plan required under the CMOM (Capacity, Management, Operation and Maintenance) section of this permit and s. NR 210.23 (4) (f), Wis. Adm. Code. Such public notification shall occur promptly following any overflow event using the most effective and efficient communications available in the community. At minimum, a daily newspaper of general circulation in the county(s) and municipality whose waters may be affected by the overflow shall be notified by written or electronic communication.

6.3.2 Capacity, Management, Operation and Maintenance (CMOM) Program

- The permittee shall have written documentation of the Capacity, Management, Operation and Maintenance (CMOM) program components in accordance with s. NR 210.23(4), Wis. Adm. Code. Such documentation shall be available for Department review upon request. The Department may request that the permittee provide this documentation or prepare a summary of the permittee's CMOM program at the time of application for reissuance of the WPDES permit.
- The permittee shall implement a CMOM program in accordance with s. NR 210.23, Wis. Adm. Code.
- The permittee shall at least annually conduct a self-audit of activities conducted under the permittee's CMOM program to ensure CMOM components are being implemented as necessary to meet the general standards of s. NR 210.23(3), Wis. Adm. Code.

6.3.3 Sewer Cleaning Debris and Materials

All debris and material removed from cleaning sanitary sewers shall be managed to prevent nuisances, run-off, ground infiltration or prohibited discharges.

- Debris and solid waste shall be dewatered, dried and then disposed of at a licensed solid waste facility.
- Liquid waste from the cleaning and dewatering operations shall be collected and disposed of at a permitted wastewater treatment facility.
- Combination waste including liquid waste along with debris and solid waste may be disposed of at a licensed solid waste facility or wastewater treatment facility willing to accept the waste.

6.4 Surface Water Requirements

6.4.1 Permittee-Determined Limit of Quantitation Incorporated into this Permit

For pollutants with water quality-based effluent limits below the Limit of Quantitation (LOQ) in this permit, the LOQ calculated by the permittee and reported on the Discharge Monitoring Reports (DMRs) is incorporated by reference into this permit. The LOQ shall be reported on the DMRs, shall be the lowest quantifiable level practicable, and shall be no greater than the minimum level (ML) specified in or approved under 40 CFR Part 136 for the pollutant at the time this permit was issued, unless this permit specifies a higher LOQ.

6.4.2 Appropriate Formulas for Effluent Calculations

The permittee shall use the following formulas for calculating effluent results to determine compliance with average concentration limits and mass limits and total load limits:

Weekly/Monthly/Six-Month/Annual Average Concentration = the sum of all daily results for that week/month/six-month/year, divided by the number of results during that time period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April, except in cases of Water Quality Trading, wherein the applicable periods are January through June and July through December.]

Weekly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the week.

Monthly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the month.

Six-Month Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the six-month period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Annual Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the entire year.

Total Monthly Discharge: = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34.

Total Annual Discharge: = sum of total monthly discharges for the calendar year.

12-Month Rolling Sum of Total Monthly Discharge: = the sum of the most recent 12 consecutive months of Total Monthly Discharges.

6.4.3 Effluent Temperature Requirements

Weekly Average Temperature – If temperature limits are included in this permit, Weekly Average Temperature shall be calculated as the sum of all daily maximum results for that week divided by the number of daily maximum results during that time period.

Cold Shock Standard – Water temperatures of the discharge shall be controlled in a manner as to protect fish and aquatic life uses from the deleterious effects of cold shock pursuant to Wis. Adm. Code, s. NR 102.28. 'Cold Shock' means exposure of aquatic organisms to a rapid decrease in temperature and a sustained exposure to low temperature that induces abnormal behavior or physiological performance and may lead to death.

Rate of Temperature Change Standard – Temperature of a water of the state or discharge to a water of the state may not be artificially raised or lowered at such a rate that it causes detrimental health or reproductive effects to fish or aquatic life of the water of the state pursuant to Wis. Adm. Code, s. NR 102.29.

6.4.4 Visible Foam or Floating Solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

6.4.5 Surface Water Uses and Criteria

In accordance with NR 102.04, Wis. Adm. Code, surface water uses and criteria are established to govern water management decisions. Practices attributable to municipal, industrial, commercial, domestic, agricultural, land development or other activities shall be controlled so that all surface waters including the mixing zone meet the following conditions at all times and under all flow and water level conditions:

a) Substances that will cause objectionable deposits on the shore or in the bed of a body of water, shall not be present in such amounts as to interfere with public rights in waters of the state.

b) Floating or submerged debris, oil, scum or other material shall not be present in such amounts as to interfere with public rights in waters of the state.

c) Materials producing color, odor, taste or unsightliness shall not be present in such amounts as to interfere with public rights in waters of the state.

d) Substances in concentrations or in combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant or aquatic life.

6.4.6 Percent Removal

During any 30 consecutive days, the average effluent concentrations of BOD_5 and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively. This requirement does not apply to removal of total suspended solids if the permittee operates a lagoon system and has received a variance for suspended solids granted under NR 210.07(2), Wis. Adm. Code.

6.4.7 Fecal Coliform

The monthly limit for fecal coliform shall be expressed as a geometric mean. In calculating the geometric mean, a value of 1 is used for any result of 0.

6.4.8 *E. coli*

The monthly limit for *E. coli* shall be expressed as a geometric mean. In calculating the geometric mean, a value of 1 is used for any result of 0.

6.4.9 Seasonal Disinfection

Disinfection shall be provided from May 1 through September 30 of each year. Monitoring requirements and the limitations for Fecal Coliform (interim) and *E. coli* apply only during the period in which disinfection is required. Whenever chlorine is used for disinfection or other uses, the limitations and monitoring requirements for residual chlorine shall apply. A dechlorination process shall be in operation whenever chlorine is used.

6.4.10 Whole Effluent Toxicity (WET) Monitoring Requirements

In order to determine the potential impact of the discharge on aquatic organisms, static-renewal toxicity tests shall be performed on the effluent in accordance with the procedures specified in the *"State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition" (PUB-WT-797*, November 2004) as required by NR 219.04, Table A, Wis. Adm. Code). All of the WET tests required in this permit, including any required retests, shall be conducted on the *Ceriodaphnia dubia* and fathead minnow species. Receiving water samples shall not be collected from any point in contact with the permittee's mixing zone and every attempt shall be made to avoid contact with any other discharge's mixing zone.

6.4.11 Whole Effluent Toxicity (WET) Identification and Reduction

Within 60 days of a retest which showed positive results, the permittee shall submit a written report to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921, which details the following:

- A description of actions the permittee has taken or will take to remove toxicity and to prevent the recurrence of toxicity;
- A description of toxicity reduction evaluation (TRE) investigations that have been or will be done to identify potential sources of toxicity, including the following actions:

a) Evaluate the performance of the treatment system to identify deficiencies contributing to effluent toxicity (e.g., operational problems, chemical additives, incomplete treatment)

b) Identify the compound(s) causing toxicity. Conduct toxicity screening tests on the effluent at a minimum of once per month for six months to determine if toxicity recurs. Screening tests are WET tests using fewer effluent concentrations conducted on the most sensitive species. If any of the screening tests contain toxicity, conduct a toxicity identification evaluation (TIE) to determine the cause. TIE methods are available from USEPA "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures (EPA/600/6-91/003) and "Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA/600/6-91/005F).

c) Trace the compound(s) causing toxicity to their sources (e.g., industrial, commercial, domestic)

d) Evaluate, select, and implement methods or technologies to control effluent toxicity (e.g., in-plant or pretreatment controls, source reduction or removal)

- Where corrective actions including a TRE have not been completed, an expeditious schedule under which corrective actions will be implemented;
- If no actions have been taken, the reason for not taking action.

The permittee may also request approval from the Department to postpone additional retests in order to investigate the source(s) of toxicity. Postponed retests must be completed after toxicity is believed to have been removed.

6.4.12 PFOS and PFOA Requirements

The laboratory performing the analysis on any samples shall be certified for the applicable PFAS compounds in the aqueous matrix by the Wisconsin Laboratory Certification Program established under s. 299.11, Wis. Stats., in accordance with s. NR 149.41, Wis. Adm. Code. If the EPA Office of Water publishes a 1600 series isotope dilution method for the analysis of PFAS in wastewater, the department recommends the use of the EPA method.
The Department may reject any sample results if results are produced by a laboratory that is not in compliance with certification requirements under ch. NR 149, Wis. Adm. Code.

6.5 Land Application Requirements

6.5.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations

In the event that new federal sewage sludge standards or regulations are promulgated, the permittee shall comply with the new sewage sludge requirements by the dates established in the regulations, if required by federal law, even if the permit has not yet been modified to incorporate the new federal regulations.

6.5.2 General Sludge Management Information

The General Sludge Management Form 3400-48 shall be completed and submitted prior to any significant sludge management changes.

6.5.3 Sludge Samples

All sludge samples shall be collected at a point and in a manner which will yield sample results which are representative of the sludge being tested, and collected at the time which is appropriate for the specific test.

6.5.4 Land Application Characteristic Report

Each report shall consist of a Characteristic Form 3400-49 and Lab Report. The Characteristic Report Form 3400-49 shall be submitted electronically by January 31 following each year of analysis.

Following submittal of the electronic Characteristic Report Form 3400-49, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report is true, accurate and complete. The Lab Report must be sent directly to the facility's DNR sludge representative or basin engineer unless approval for not submitting the lab reports has been given.

The permittee shall use the following convention when reporting sludge monitoring results: Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 1.0 mg/kg, report the pollutant concentration as < 1.0 mg/kg .

All results shall be reported on a dry weight basis.

6.5.5 Calculation of Water Extractable Phosphorus

When sludge analysis for Water Extractable Phosphorus is required by this permit, the permittee shall use the following formula to calculate and report Water Extractable Phosphorus:
Water Extractable Phosphorus (% of Total P) =
[Water Extractable Phosphorus (mg/kg, dry wt) ÷ Total Phosphorus (mg/kg, dry wt)] x 100

6.5.6 Monitoring and Calculating PCB Concentrations in Sludge

When sludge analysis for "PCB, Total Dry Wt" is required by this permit, the PCB concentration in the sludge shall be determined using either congener-specific analysis or Aroclor analysis. The permittee may decide which of these analyses is performed. Analyses shall be performed in accordance with the following provisions and Table EM in s. NR 219.04, Wis. Adm. Code:

- If congener-specific analysis is employed: All PCB congeners shall be delineated. Non-detects shall be treated as zero. The values that are between the limit of detection (LOD) and the limit of quantitation shall be used when calculating the total value of all congeners. All results shall be added together and the total PCB concentration by dry weight reported.
- If Aroclor analysis is employed, reporting protocols, consistent with s. NR 106.07(6)(e), should be as follows: If all Aroclors are less than the LOD, then the Total PCB Dry Wt result should be reported as less than the highest LOD. If a single Aroclor is detected, then that is what should be reported for the Total PCB result. If multiple Aroclors are detected, they should be summed and reported as Total PCBs. If the LOD cannot be achieved after using the appropriate clean up techniques, a reporting limit that is achievable for the Aroclors or each congener for the sample shall be determined. This reporting limit shall be reported and qualified indicating the presence of an interference.

6.5.7 Annual Land Application Report

Land Application Report Form 3400-55 shall be submitted electronically by January 31, each year whether or not non-exceptional quality sludge is land applied. Non-exceptional quality sludge is defined in s. NR 204.07(4), Wis. Adm. Code. Following submittal of the electronic Annual Land Application Report Form 3400-55, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

6.5.8 Other Methods of Disposal or Distribution Report

The permittee shall submit electronically the Other Methods of Disposal or Distribution Report Form 3400-52 by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied. Following submittal of the electronic Report Form 3400-52, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or

proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

6.5.9 Approval to Land Apply

Bulk non-exceptional quality sludge as defined in s. NR 204.07(4), Wis. Adm. Code, may not be applied to land without a written approval letter or Form 3400-122 from the Department unless the Permittee has obtained permission from the Department to self-approve sites in accordance with s. NR 204.06(6), Wis. Adm. Code. Analysis of sludge characteristics is required prior to land application. Application on frozen or snow-covered ground is restricted to the extent specified in s. NR 204.07(3)(l), Wis. Adm. Code.

6.5.10 Soil Analysis Requirements

Each site requested for approval for land application must have the soil tested prior to use. Each approved site used for land application must subsequently be soil tested such that there is at least one valid soil test in the four years prior to land application. All soil sampling and submittal of information to the testing laboratory shall be done in accordance with UW Extension Bulletin A-2100. The testing shall be done by the UW Soils Lab in Madison or Marshfield, WI or at a lab approved by UW. The test results including the crop recommendations shall be submitted to the DNR contact listed for this permit, as they are available. Application rates shall be determined based on the crop nitrogen recommendations and with consideration for other sources of nitrogen applied to the site.

6.5.11 Land Application Site Evaluation

For non-exceptional quality sludge, as defined in s. NR 204.07(4), Wis. Adm. Code, a Land Application Site Request Form 3400-053 shall be submitted to the Department for the proposed land application site. The Department will evaluate the proposed site for acceptability and will either approve or deny use of the proposed site. The permittee may obtain permission to approve their own sites in accordance with s. NR 204.06(6), Wis. Adm. Code.

6.5.12 Class B Sludge: Fecal Coliform Limitation

Compliance with the fecal coliform limitation for Class B sludge shall be demonstrated by calculating the geometric mean of at least 7 separate samples. (Note that a Total Solids analysis must be done on each sample). The geometric mean shall be less than 2,000,000 MPN or CFU/g TS. Calculation of the geometric mean can be done using one of the following 2 methods.

Method 1:

Geometric Mean = $(X_1 \times X_2 \times X_3 \ldots \times X_n)^{1/n}$

Where X = Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Method 2:

Geometric Mean = $\text{antilog}[(X_1 + X_2 + X_3 \ldots + X_n) \div n]$

Where X = $\log_{10}$ of Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Example for Method 2

Sample Number	Coliform Density of Sludge Sample	$\log_{10}$
1	6.0×10^5	5.78
2	4.2×10^6	6.62
3	1.6×10^6	6.20
4	9.0×10^5	5.95
5	4.0×10^5	5.60
6	1.0×10^6	6.00
7	5.1×10^5	5.71

The geometric mean for the seven samples is determined by averaging the $\log_{10}$ values of the coliform density and taking the antilog of that value.

$(5.78 + 6.62 + 6.20 + 5.95 + 5.60 + 6.00 + 5.71) \div 7 = 5.98$

The antilog of 5.98 = 9.5×10^5

6.5.13 Vector Control: Volatile Solids Reduction

The mass of volatile solids in the sludge shall be reduced by a minimum of 38% between the time the sludge enters the digestion process and the time it either exits the digester or a storage facility. For calculation of volatile solids reduction, the permittee shall use the Van Kleeck equation or one of the other methods described in "Determination of Volatile Solids Reduction in Digestion" by J.B. Farrell, which is Appendix C of EPA's *Control of Pathogens in Municipal Wastewater Sludge* (EPA/625/R-92/013). The Van Kleeck equation is:

$$VSR\% = \frac{VS_{IN} - VS_{OUT}}{VS_{IN} - (VS_{OUT} \times VS_{IN})} \times 100$$

Where: VS_{IN} = Volatile Solids in Feed Sludge (g VS/g TS)

VS_{OUT} = Volatile Solids in Final Sludge (g VS/g TS)

VSR% = Volatile Solids Reduction, (Percent)

7 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

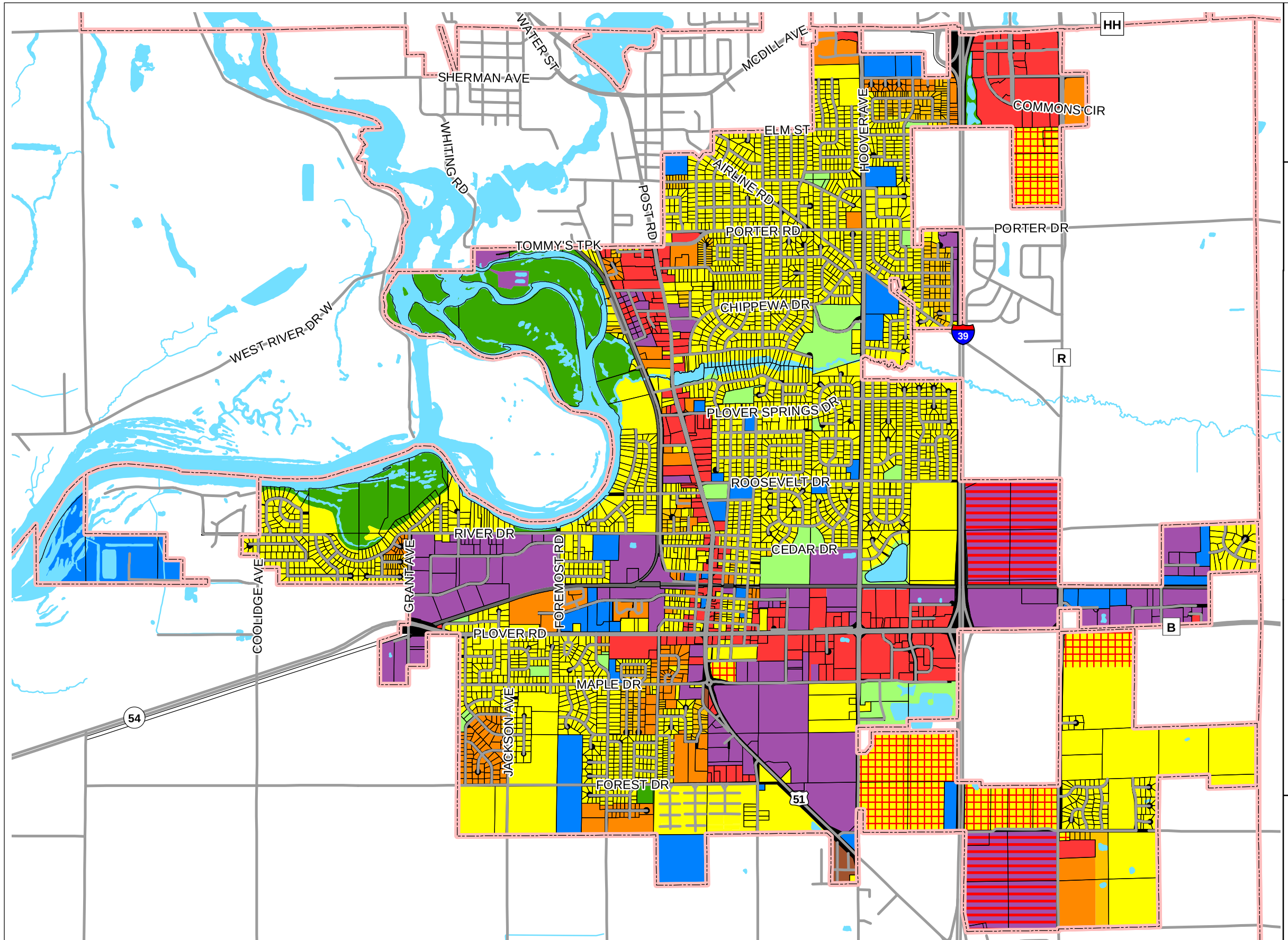
Description	Date	Page
Effluent Limitations for E. coli -Status Update	February 21, 2025	16
Effluent Limitations for E. coli -Operational Evaluation Report	November 30, 2025	16
Effluent Limitations for E. coli -Submit Facility Plan	April 30, 2026	16
Effluent Limitations for E. coli -Final Plans and Specifications	March 31, 2027	16
Effluent Limitations for E. coli -Treatment Plant Upgrade to Meet Limitations	September 30, 2027	17
Effluent Limitations for E. coli -Construction Upgrade Progress Report	September 30, 2028	17
Effluent Limitations for E. coli -Complete Construction	March 31, 2029	17
Effluent Limitations for E. coli -Achieve Compliance	April 30, 2029	17
PFOS/PFOA Minimization Plan Determination of Need -Report on Effluent Discharge	December 31, 2025	17
PFOS/PFOA Minimization Plan Determination of Need -Report on Effluent Discharge and Evaluation of Need	December 31, 2026	17
Compliance Maintenance Annual Reports (CMAR)	by June 30, each year	20
General Sludge Management Form 3400-48	prior to any significant sludge management changes	28
Characteristic Form 3400-49 and Lab Report	by January 31 following each year of analysis	28
Land Application Report Form 3400-55	by January 31, each year whether or not non-exceptional quality sludge is land applied	29
Other Methods of Disposal or Distribution Report Form 3400-52	by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied	29
Wastewater Discharge Monitoring Report	no later than the date indicated on the form	19

Report forms shall be submitted electronically in accordance with the reporting requirements herein. Any facility plans or plans and specifications for municipal, industrial, industrial pretreatment and non-industrial wastewater systems shall be submitted to the Bureau of Water Quality, P.O. Box 7921, Madison, WI 53707-7921. All other submittals required by this permit shall be submitted to:
West Central Region, 1300 W. Clairemont Ave, Eau Claire, WI 54701

Appendix B

Stevens Point Urban Area Sewer Service Planning Area Excerpts

Map 8.3
Future Land Use Within 2018 Village Boundary



Land Use Classes

- Single Family
- Duplex
- Multi-family (3+ units)
- Mobile Home Park
- Commercial / Office
- Commercial/Industrial
- Commercial/Residential
- Institutional / Governmental
- Industry
- Agriculture
- Park
- Not Developable
- Railroad
- Road Right-of-Way
- Municipal Boundary
- Lakes and Streams

N W E S

0 0.25 0.5 1 Miles

Source: Portage County Planning & Zoning (2018)
Village of Plover (2018)

Map Printed: October 24, 2018

Village of Plover Comprehensive Plan

Portage County
Planning & Zoning
1462 Strongs Ave.
Stevens Point, WI 54481

Appendix C

Village of Plover Comprehensive Master Plan Excerpts

CHAPTER 5 Agricultural, Natural, and Cultural Resources Element

66.1001(2)(e) Wis. Stat.:

***Agricultural, Natural and Cultural Resources element**. A compilation of objectives, policies, goals, maps and programs for the conservation, and promotion of the effective management, of natural resources such as groundwater, forests, productive agricultural area, environmentally sensitive areas, threatened and endangered species, stream corridors, surface water, floodplains, wetlands, wildlife habitat, metallic and nonmetallic mineral resources, parks, open spaces, historical and cultural resources, community design, recreational resources and other natural resources.*

Section 5.1 Agricultural Resources Inventory

A. Agricultural lands

The Village of Plover has approximately 922 acres of agricultural land within the Village limits. It is assumed that the agricultural land within the Village limits will ultimately be converted to "urban" uses and is therefore considered a holding area for future development both during and beyond the planning period.

B. Farm numbers, types, and size

Nearly 800 acres of the 922 acres of agricultural land within the Village are currently cropped, among them:

- *Sankey* properties located south of Crossroads Commons (approx. 65 acres)
- *Sankey* properties located along the southeast corner of Cty Rd B and Cty Rd R (approx. 95 acres)
- *Westside Highway LLC* properties north of RR Donnelly (approx. 75 acres)
- *Portage County* property west of Kennedy Avenue (approx. 40 acres)
- *Hamerski* properties south of Pleasant Drive and east of I39 (approx145 acres)
- *Worzella* properties west of Hoover Avenue (approx. 180 acres)
- *Worzella* properties east of Hoover Avenue (approx. 115 acres)
- *Worzella* properties south of Forest Drive (approx. 40 acres)
- *Okray* property south of Patty Drive (approx. 30 acres)
- *Farming for the Future Foundation* properties south of Lake Pacawa Park (four 1-acre test plots = 4 acres)



Food and Farm Exploration Center, completed in 2023

C. Farm Economy and Infrastructure

The Village has several businesses in the Community directly related to the agricultural economy of the surrounding area. They include: Okray Family Farms, Worzella & Sons, Monogram Foods, Infinity Foods Inc., Del Monte, Jay Mar, Inc., McCain Foods, Moodie Trucking, Mullins Cheese, Reinders, Inc. Foremost Farms, Rib Stone Silo, Roberts Irrigation, Ingredion Inc., Big Iron Equipment, Warner and Warner. Lastly, in 2023 the Food & Farm Exploration Center was completed south of Lake Pacawa Park. This state of the art facility works with farmers across the Midwest to provide educational opportunities and experiences for visitors, students, and other farming agencies, prioritizing the importance of farming, its rich history, and new innovative technologies.

Section 5.2 Natural Resources Inventory

This section describes the existing conditions of natural resources in the Village of Plover and surrounding area. Natural resources include: soils, surface water, groundwater, floodplains, wetlands, forests, wildlife, prairie lands, etc.

A. Geology

The Village of Plover is located near the boundary line between two geological provinces, the northern highlands and the central sand plain. The former area is characterized by high bedrock, low available groundwater supply, clay type soils, poor land drainage and northern climate vegetation. Generally, this area lies to the north and west of the Village. The Village primarily lies within the central sand plain, which is characterized by flat topography, ample groundwater supply and sand plain features, including sandy soils that are well drained.

The surface geology of the region along the Wisconsin River is characterized as an "outwash plain", formed from materials deposited in the area from melt water flowing to the Wisconsin River from the edges of the glacial ice sheets to the east. As a result, the Village's landscape was not shaped directly by glacial action, as was the case with lands a few miles east of the Village where glacial "drift" has formed a hilly landscape.

B. Bedrock

The Village's located near a series of rapids (now inundated) on the Wisconsin River as evident with the presence of bedrock near the surface of the ground throughout the northwestern area of the Village, along Hoover Ave, and near the Little Plover River. Depth to bedrock is generally greater than 10' throughout most of the community. The bedrock that does underlie the area consists of granite, according to previous drilling reports.

C. Topography

The topography of the Village is relatively flat, with the greatest relief being the approximately 100-foot bluff forming the east bank of the Wisconsin River (Map 5.1). Glacial outwash formed the relatively flat topography in the Village, which averages about 1,085 feet above sea level. The flat topography contributes to some drainage problems in areas that have been hard surfaced for development purposes. There are no hills or steep grades which present significant problems to development beyond the steep shorelines of the Wisconsin River. The shoreland area along the Little Plover River and Wisconsin River presents the sharpest change in topography. Grades are relatively gentle along the Little Plover River, but grades of 25%+ can be found along the Wisconsin River.

D. Soils

Soils found in the Village are sandy in nature and present few limitations to development (Map 5.2). An exception is a band of Friendship soils, which extends from the base of the Arnott Moraine two miles east of the Village, through the southern quadrant of the Village (generally south of Roosevelt Drive to Wilson Street), to the Buena Vista Marsh. The Soil Survey of Portage County characterizes Friendship soils as having saturated soils within 3 to 5 feet of the surface. Elevated groundwater conditions exist in the area south of Forest Drive. The remainder of the area is subject to periodic elevated groundwater. The last occurrence of elevated groundwater levels was in 1993, when numerous basements were flooded. Local reports indicate that the previous elevated groundwater occurrences were in 1973/4 and 1938.

Soils that occur in the Plover area are characterized as rapidly permeable and may constitute a "moderate" limitation for on-site sewage disposal systems because of the danger of contaminating groundwater supplies. This limitation would not apply in areas served by municipal sewer. The rapid permeability of these soils, however, increases the impact of pollutant sources on the groundwater supply. The Village installed a public water system in 1989 and 1990.

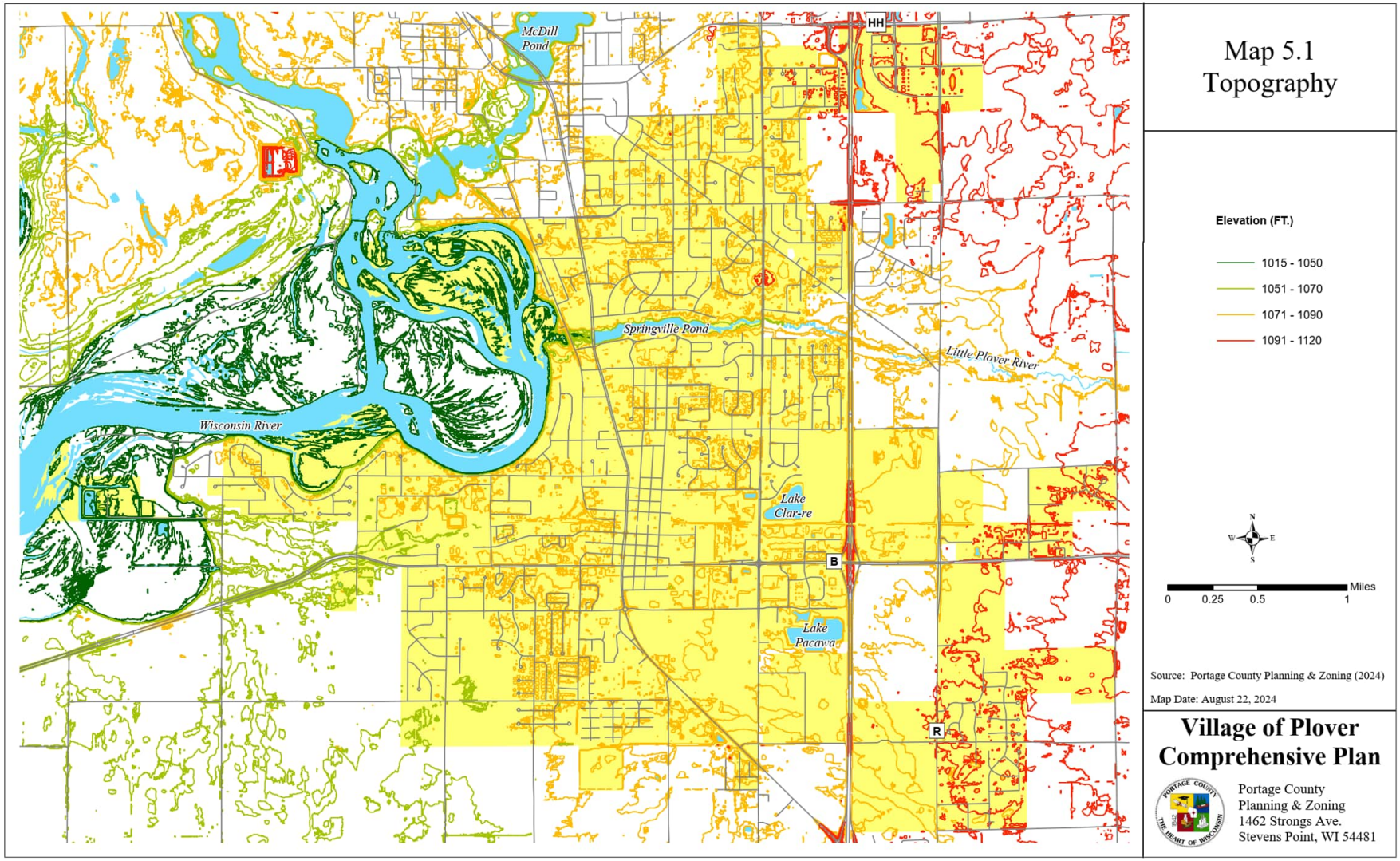
E. Groundwater

The Village of Plover is located in the central sand plain geographical province of Wisconsin, an area of mostly flat, unglaciated lands composed of glacial outwash sands, which also function as an aquifer which provides an abundant supply of water.

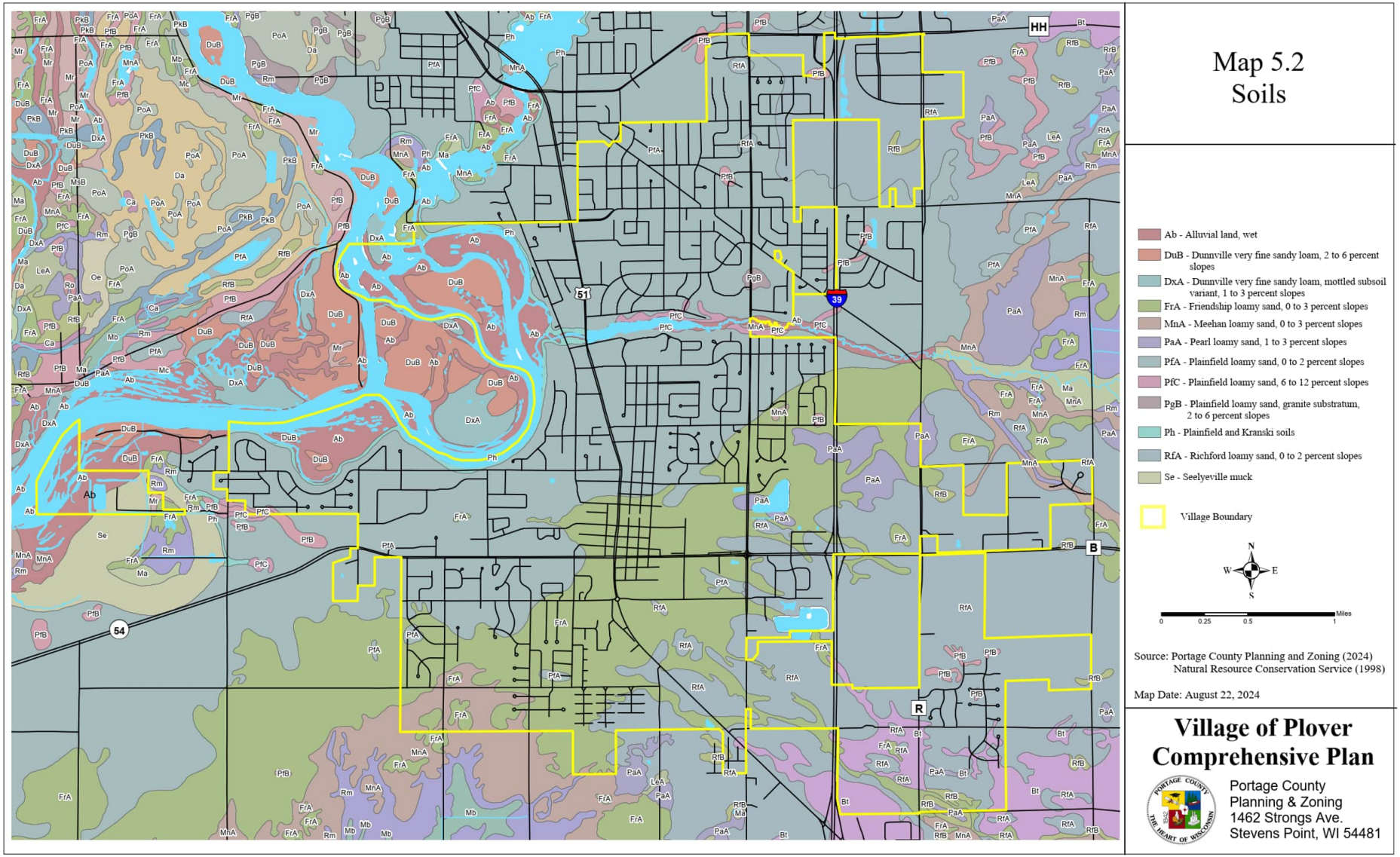
The possible pollution of groundwater from on-site sewage disposal systems, lawn fertilization practices, agricultural practices, existing land uses and landowner practices could endanger the Village's public water supply and affect the surface waters of the Wisconsin and Little Plover Rivers. In 1990 and 2002, the Village adopted Wellhead Protection Plans to protect groundwater resources and safeguard public health and safety. The Wellhead Protection Plans delineate wellhead protection zones, evaluate contaminant sources, identify potential management strategies and offer specific recommendations for protection of the Village well recharge areas. See Chapter 4, Section 4.1(C) and Chapter 8, Map 8.6 for more on wellhead protection areas.

The Village of Plover has responsibilities to its Village residents and businesses, who depend on the Village for a safe, adequate supply of water. Providing a safe and adequate supply of water means that the Village must take steps to ensure long-term access to high quality groundwater at a certain quantity and continue to work closely with local food processors, the agriculture industry, area residents, State agencies, and environmental groups to reach these goals. It also means that the Village must be a good steward of this resource because the groundwater supply is not unlimited and how we use this valuable resource affects the environment as well as other users of groundwater.

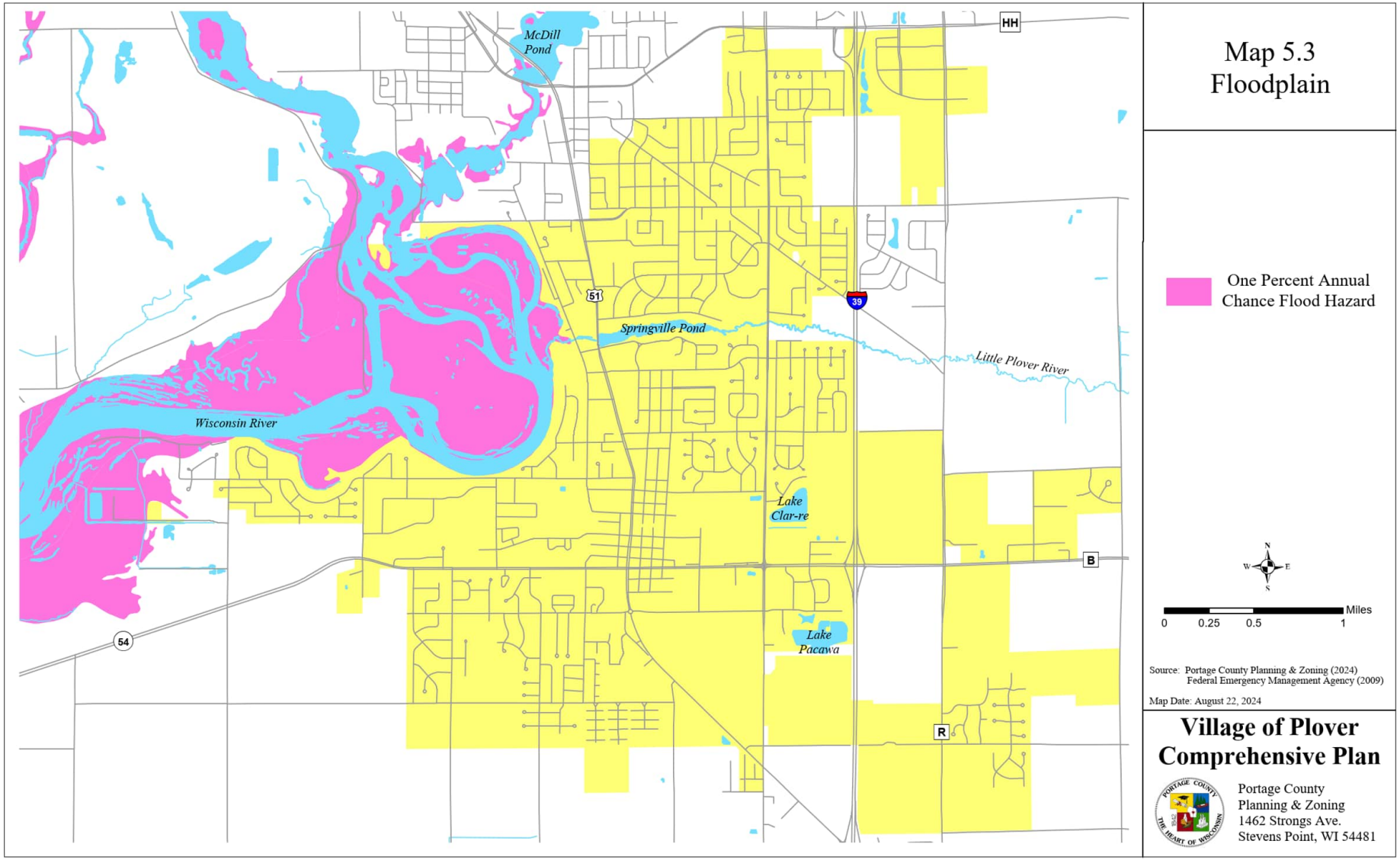
Map 5.1 Topography



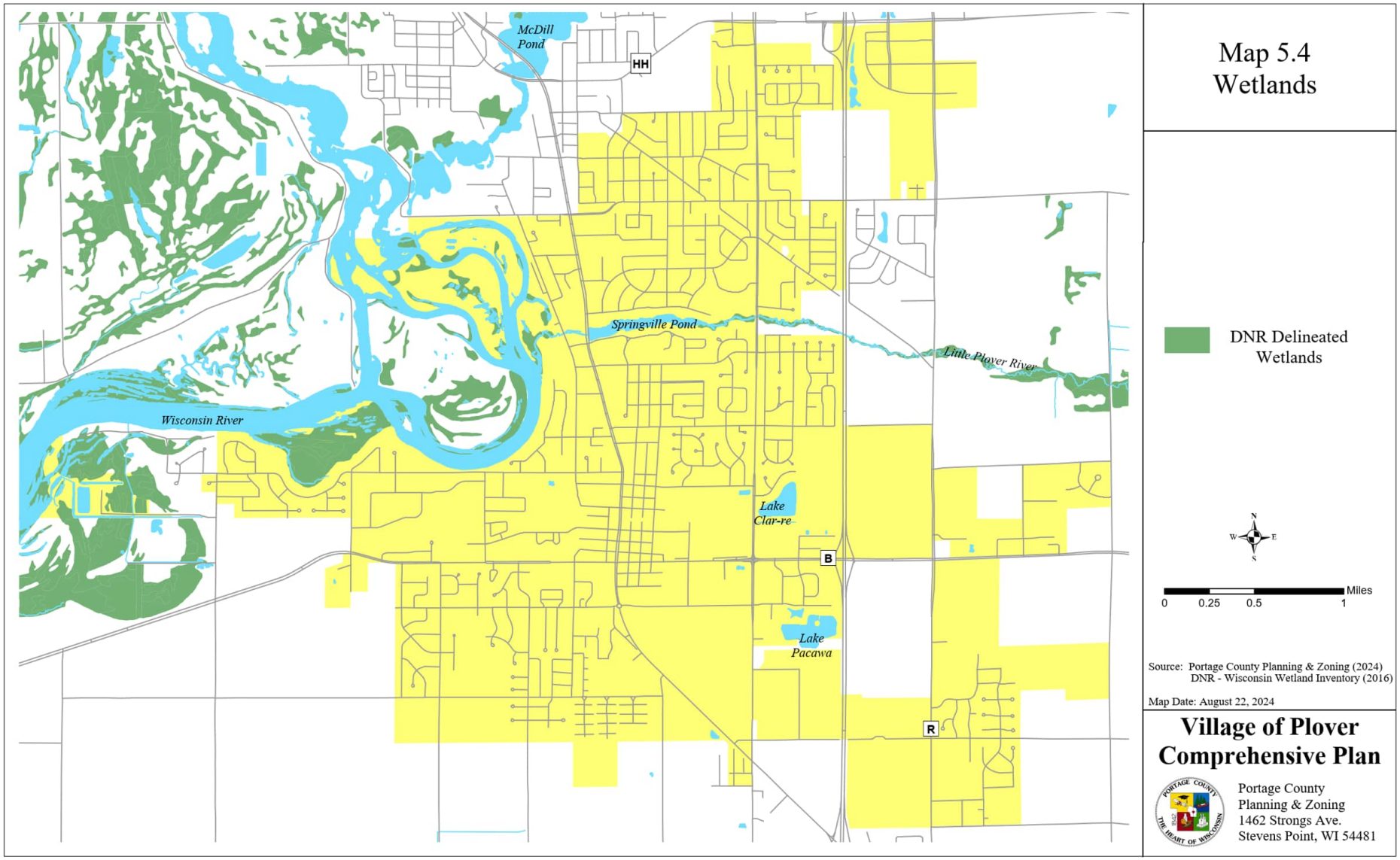
Map 5.2 Soils


Map 5.2
Soils
Ab - Alluvial land, wet
DuB - Dunnville very fine sandy loam, 2 to 6 percent slopes
DxA - Dunnville very fine sandy loam, mottled subsoil variant, 1 to 3 percent slopes
FrA - Friendship loamy sand, 0 to 3 percent slopes
MnA - Meehan loamy sand, 0 to 3 percent slopes
PaA - Pearl loamy sand, 1 to 3 percent slopes
PfA - Plainfield loamy sand, 0 to 2 percent slopes
PfC - Plainfield loamy sand, 6 to 12 percent slopes
PgB - Plainfield loamy sand, granite substratum, 2 to 6 percent slopes
Ph - Plainfield and Kranski soils
RfA - Richford loamy sand, 0 to 2 percent slopes
Se - Seelyeville muck
Village Boundary
N
W
E
S
0
0.25
0.5
1
Miles
Source: Portage County Planning and Zoning (2024)
Natural Resource Conservation Service (1998)
Map Date: August 22, 2024
Village of Plover
Comprehensive Plan
Portage County
Planning & Zoning
1462 Strongs Ave.
Stevens Point, WI 54481
HH
B
R
51
39
54

Map 5.3 Surface Waters and Floodplain



Map 5.4 Wetlands



F. Surface Water

The Village is in the Plover and Little Plover River watershed (see Map 5.3). The Wisconsin River and Little Plover River are the only watercourses within the Village. Phosphorus and other pollutants have historically adversely impacted the water quality of these watercourses. Phosphorus in particular has had negative impacts on the resource. It is estimated that 20% of phosphorus loading to waterways comes from point sources like sewer treatment plants and storm water runoff outlets, and 80% comes from non-point sources like agriculture operations, etc.

Steps have been taken both within the Village of Plover and elsewhere to try and address water quality issues, and while improvement in quality has occurred, additional work must be done, particularly with non-point solutions, to more quickly increase improvement. The Little Plover River Watershed Enhancement Project should also assist with water quality improvement efforts.

Several subtle drainageways, coupled with the area's flat topography, result in troublesome surface water flooding, particularly in the spring. These drainageways generally do not have distinguishable stream banks and serve to carry runoff from the moraine hills east of the Village to the Wisconsin River. The development potential of prime developable lands south of Cty Rd B has historically been affected by this surface drainage condition. The Village has addressed a portion of this development limitation through the development of an open channel drainage system west of Business Highway 51/STH 54. The remainder of the surface drainage limitation was addressed by the Department of Transportation (WisDOT), when STH 54 was upgraded. The following is a summary of surface water resources within Village of Plover:

1. Springville Pond - Springville Pond is an 18-acre impoundment on the Little Plover River with clear, hard water. The natural sand bottom is covered by silt in some areas. Fish species present include northern pike, perch, largemouth bass, smallmouth bass, bluegill, brook trout, and rainbow trout. The majority of the pond is developed and has a variety of recreational opportunities. Aquatic (invasive) vegetation growth, fluctuating water levels, and surrounding land use changes has become a concern for the pond in the last few years. As a result, the Springville Pond Management Committee, tasked with addressing and providing recommendations to the Village, reconvened in 2022 (after seven years) to update the Springville Pond Management Plan (adopted in 2024) and address ongoing concerns and opportunities.



Springville Pond

2. Little Plover River - The Little Plover River is a clear, hard water stream that flows through the Village and into the Wisconsin River. Within the Village, the Little Plover River becomes an impoundment which is called Springville Pond. Much of the volume of the Little Plover River is contributed by springs. Sand and gravel are the predominant bottom materials. Undercut banks, logs, and trees are abundant. Brook trout is the predominant

fish species in this stream. In addition, there are approximately 190 acres of WiDNR fish management lands to the east of the Village, adjacent to the Little Plover River.

3. Wisconsin River - The Wisconsin River is a soft, darkly stained river that flows through Portage County. The Wisconsin River is used as a recreational resource as well as a water source by the paper manufacturing industry, for industrial power, as a discharge site for wastewater treatment facilities. Northern pike, walleye, perch, largemouth bass, smallmouth bass, bluegill, black crappie, rock bass, pumpkin seed, bullhead, bowfin, and burbot, along with carp, white suckers, sturgeon, musky and redhorse constitute the fishery. Numerous backwater regions provide habitat for many varieties of wildlife.

4. Man-made Lakes – Man-made lakes include Lake Pacawa and Lake Clar-Re. Lake Pacawa Park is used for a variety of community events. Lake Pacawa has a public beach, ADA accessible kayak launch and fishing piers, and a multitude of new recreational amenities and facilities. Ongoing water quality efforts have taken place in the lake including but not limited to shoreline restoration and native plantings, invasive species treatments, and three newly installed aerators (2022). The Wisconsin Korean War Veterans' Memorial was established on the island located in the center of the lake in 1997. Lake Pacawa is used for a variety of community events including the Hmong Association New Year and events, the Korean War Memorial Ceremony and Program, and the Celebrate Plover Festival. Lake Clar-Re is associated with residential development and is located just north of the Green Bay and Western railroad tracks along Hoover Avenue.



Lake Pacawa

G. Wetlands

Small wetland areas of local significance are located along the Little Plover and Wisconsin Rivers' bottom lands. Some wetland areas along the Little Plover River have been lost to residential development, however, remaining wetlands are considered undevelopable (Map 5.4). Because of the limited extent of wetlands, streams, water bodies and high bedrock within the Village, development limitations are considered minimal. The Kimberly Clark waste treatment facility, located on an island in the Wisconsin River bottom, is the only development in an area associated with surface water limitations. This treatment facility is protected from flood waters.

H. Floodplains

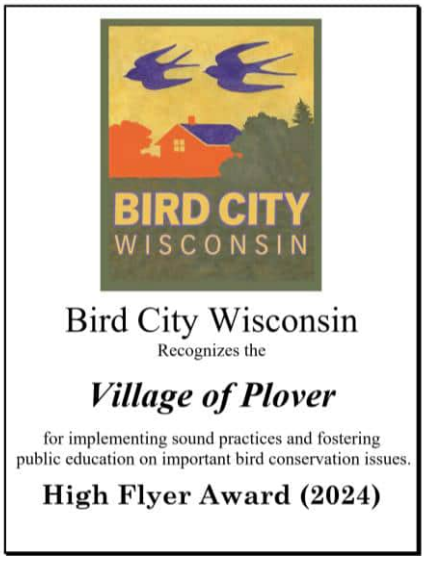
The only conventional floodplain in the Village is associated with the Wisconsin River, and it has no effect on existing or future developable lands due to separation from Village properties by the high riverbanks, see Map 5.3.

I. Wildlife

Fish and wildlife habitat is concentrated in the Wisconsin and Little Plover River corridors. The Little Plover River is a trout stream and the Wisconsin Department of Natural Resources has made considerable stream bank improvements east of the Village to improve trout habitat. Scattered woodlands exist throughout the Village, which provide habitat for various wildlife species, including white tailed deer. These woodlands are slowly being eliminated by development. This trend is expected to continue. The Village of Plover is currently working with the Village of Whiting and City of Stevens Point on a joint deer management plan. This more comprehensive approach to what is a multi-jurisdictional issue will provide better long term management, helping to reduce damage to private property without elimination of the deer population.

J. Bird City

The Village of Plover has been honored to receive the acknowledgement by Bird City Wisconsin as a Bird City community from 2012-2024. During the 2013 nesting season in the Village of Plover, a total of 140 nest boxes were overseen by eight monitors. Four Village parks were included in this monitoring. A total of 447 Bluebirds and another 251 songbirds (Wrens, Chickadees & Tree Swallows) were produced from these boxes. Volunteers have and continue to play a pivotal role in the ongoing surveying, monitoring, and habitat restoration efforts throughout the community. In 2022 the Village of Plover for the first time received the Bird Cities highest designation of "High Flyer" for the 2021 year due to it and its volunteers efforts to document and protect birds and their habitat. The Village again received this "High Flyer" designation in 2023 and in 2024.



Village of Plover Bird City Award, 2024

It is the Village's hope that the continued conservation efforts and land acquisitions within the Little Plover River Watershed will not only improve water quality and quantity but also help improve and/or establish habitat that will support breeding birds and other wildlife. The Village's website provides links to Bird City Wisconsin and other educational material.

K. Forest Land

Natural Forest Land - Natural forest land includes approximately 120 acres of school forest land, located south of the Village along Lincoln Avenue. This land is administered by the Stevens Point Public School system, the Stevens Point Catholic School system and the University of Wisconsin - Stevens Point. Uses include outdoor education along with timber planting/harvest. Several of the Village Parks also contains stands of trees that function as wildlife habitat as well as serving aesthetic or passive recreation purposes. Forest resources need proper management to insure long life and overall health of the resource.

L. Tree City USA

The Village of Plover has been honored as a Tree City USA for over 30 years by the National Arbor Day Foundation. In order to receive this acknowledgement, the municipality must have a

tree ordinance, a community forestry program which spends at least $2 per capita and an Arbor Day observance along with a proclamation. Trees reduce erosion of topsoil by wind and water, cut heating and cooling costs, moderate the temperature, clean the air, produce oxygen and provide habitat for wildlife, are a renewable resource giving us paper, wood for our homes, fuel for our fires, countless other wood products, and trees in our Village increase property values, enhance the economic vitality of business areas, beautify our community. In 2023 the Village of Plover celebrated its 30th year as a Tree City USA community and planted and gave away nearly 300 trees to students and those in the community.

M. Forest Land Management

It is the intent of the Village of Plover to provide long term management of its Village owned forest resources, based on best management practices developed through coordination with the Wisconsin Department of Natural Resources. This will include periodic thinning and other measures based on the species of trees within a park and encouragement of diversity of wildlife.

N. Endangered/Threatened Species, Natural Areas

Nineteen known rare and endangered species have been identified by the Wisconsin Natural Heritage Resources (NHI) located within Section 42308, which includes parts of the Towns of Linwood and Plover, along with the Villages of Plover and Whiting and City of Stevens Point. Some or all may be found in the Village of Plover; they include: Red-Shouldered Hawk, Osprey, Karner Blue Butterfly, Northern Dry-Mesic Forest, Northern Mesic Forest, Alder Thicket, Floodplain Forest, Stygian Shadowfly, Prairie Vole, Pigmy Shrew, Deam's Rockcress, Wooly Milkweed, Pale Beardtongue, Dwarf Huckleberry, Yellow Screwstem, and Wild Licorice. See Appendix H for a complete description. These elements should be taken into consideration when development and protection measures are considered.

Section 5.2.1 Little Plover River Watershed Enhancement Project (LPRWEP)

There has been a considerable amount of public discussion for the last 20 years regarding the state of the groundwater resource in Portage County. Of particular interest has been the health of the Little Plover River, which is fed nearly exclusively by groundwater, and runs through the Village of Plover from its headwaters in the Town of Stockton in the east to its confluence with the Wisconsin River in the west. From 2005 to 2009, stretches of the Little Plover River dried up due to reduced stream flow. These circumstances have made the river a central focus for study on the impacts of surrounding land use on stream flow.

The Village of Plover with its partners established the Little Plover River Watershed Enhancement Project in 2004 to address concerns that high-capacity wells near the Little Plover River were negatively affecting Little Plover River flows (quantity). The work group is a voluntary group comprised of representatives from the Wisconsin Department of Natural Resources (DNR), Village of Plover, Village of Whiting, Del Monte, farmers in the recharge area, Portage County, Trout Unlimited, University of Wisconsin Stevens Point, and the Wisconsin River Alliance. The principal goal of the work group is to establish healthy flows to the Little Plover River, as defined by the DNR. The Village of Plover has voluntarily implemented several measures to improve healthy flows to the Little Plover River, including switching 85% of pumping from two municipal wells located within a half mile of the Little Plover River to a municipal well that is located 2 ½ miles from the river and the acquisition then conversion of 140 acres of irrigated agriculture land adjacent to the Little Plover River. Land acquisition is intended to convert land from irrigated

agriculture to a park/natural area/use (Daniel R Mahoney Conservancy).

In addition to the 140-acre acquisition and conversion to native prairie and woodlands, an additional 70+/- acres of irrigated land was acquired by the Village and was converted to wetland (Soik Wetland Restoration Area). This wetland restoration work, located near the headwaters of the Little Plover River, included several wetland scrapes, removal of a high capacity well, filling over 3,200 feet of drainage ditches, and native vegetation re-establishment. Other practices in the Little Plover River Watershed have been implemented to improve groundwater quantity and quality (which contributes to the Little Plover River) as recommendations are developed/refined by the Little Plover River work group.

Village officials have continued discussions and numerous meetings with stakeholders in the region, which eventually led to expanding this effort to become the "Little Plover River Watershed Enhancement Project", extending well beyond the Village.

The Goals, Objectives, Guiding Principles, Action Options, and Funding Opportunities for this project were:

Goal

To develop and implement land-based practices that will have positive long term impacts on groundwater in the Plover area. The foundation of these efforts will be the continued development of the stakeholder working group (Little Plover River Watershed Enhancement Project Team) with members representing the agriculture, conservation, interests groups, and the Village of Plover. The purpose of this group is to develop voluntary measures to improve water retention in the Little Plover River Watershed.

Objectives

1. Enhance the function and flow of the Little Plover River through water conservation measures and river, floodplain, and wetland restoration practices that will help increase base flow, reroute diverted water towards the river, and slow the flow of water through the system.
2. Achieve a high level of ground and surface water use functions within the watershed that are consistent with a balanced approach that recognizes the needs of conservation, individuals, agriculture, industry and municipalities.
3. Alleviate storm water-driven flooding through water diversion and reuse.

Guiding Principles for Achieving Objectives

A. Determine the value of existing information in helping formulate and implement solutions.

B. Engage all potentially affected/participating landowners early and often to discuss, concerns issues, and opportunities.

C. Build strong working partnerships between the agricultural and broader community recognizing the real value and needs of agriculture in the area.

D. Focus on improving the entire Little Plover watershed including upland areas not immediately adjacent to the river.

E. Maintain opportunities for urban development consistent with Village planning that will both assist in achieving environmental and economic objectives in the Plover area.

Actions Being Considered

- Determine what actions can be taken to improve the functions and values of the Little Plover River. This may include restoring the connection between the river floodway, flood plain, and upland system, as well as establishing permanent buffers.
- Use storm water infiltration in areas where land use and topography are suitable.
- Restore wetlands in areas that will have greatest public benefit.
- Determine the feasibility of a wetland mitigation bank to help offset project costs.
- Improve uplands in the watershed to allow for current use and maximize upland contributions to restoration objectives.
- Generally, identify solutions that will lead to a balanced solution that protects water resources while meeting the needs of municipal, agricultural, industrial, and private users.

Funding

Develop recommendations/action plans that provide a variety of partnership opportunities with government agencies and private entities.

Little Plover River Master Plan

Figure 5.1 shows the master plan for the Little Plover River Conservancy Area. The 140-acre land acquisition converted irrigated agricultural land into natural areas (wetlands, prairies, woodlands). Use of the land includes public access for hunting, trapping, fishing, and hiking. The master plan also highlights future trail creation and the opportunity for educational elements and interpretive signage to be placed throughout the conservancy area.



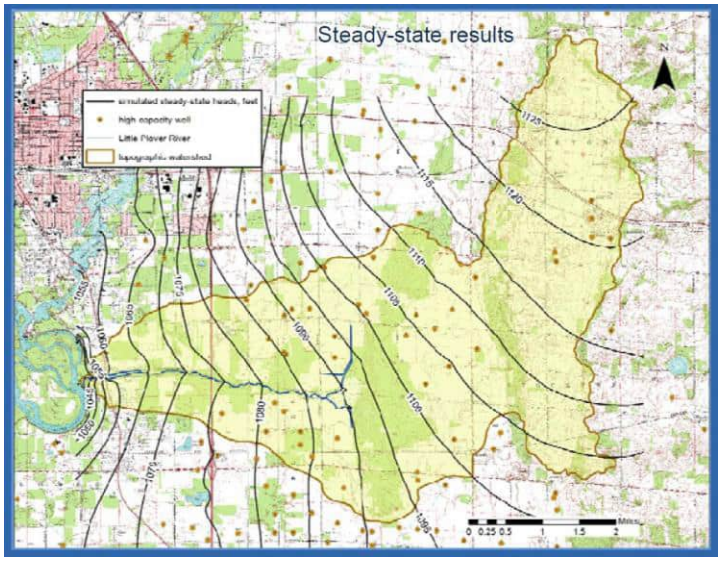


Ditch Fill project completed in 2024 as a part of the Little Plover River Enhancement Project. Left: Before fill; Right: After fill

Figure 5.1 Little Plover River Master Plan



Little Plover River Watershed



Source: Montgomery Associates

Little Plover River Watershed Enhancement Project: Past and Ongoing Initiatives

- Soik Wisconsin Wetland Conservation Trust (WWCT) Project. This Project included the purchase of approximately 60 acres of irrigated farmland in the headwaters of the Little Plover River, decommissioning a high capacity well, filling ditches, and restoration of approximately 43 acres of wetlands and approximately 15 acres of prairie. The parcel was sold to the Village by MS&S Soik Enterprises Limited Partnership and is located ¼ mile north of the Little Plover River on the east side of Kennedy Avenue. With the financial, planning, and design assistance of the Project Management Team, the Village of Plover was able to secure a $1.4 Million dollar Wisconsin Department of Natural Resources Wisconsin Wetland Conservation Trust Grant for this Project. Construction on this Project began in 2019 and was completed in 2020, with some vegetation planting, seeding, other final establishment activities being completed in early 2023. Completion of monitoring and maintenance activities and submittal of final wetland delineation and monitoring report will occur by December 31, 2027.

- Little Plover River Habitat Restoration Project. This project included the restoration of 20 acres of grass/sedge meadow and alder thicket wetland habitat along floodplain sections of the Little Plover River through vegetation management, channel restoration, and reconnection of the floodplain; restoration of 100+ acres of forest and barren habitat on LPR Conservancy Area (Daniel R. Mahoney Conservancy) and DNR State Fisheries Areas; and, restoration of 102 acres of dry-mesic/sand prairie habitat on former cropland (LPR Conservancy Area).

  The Village of Plover and the management team partnered with the University of Wisconsin Stevens Point (UWSP) on this Project. Associate Professor of Water Resources Kyle Herrman and Professor of Silviculture and Forestry Discipline Coordinator Michael Demchik led work efforts for this project and have employed UWSP students for needed assistance. This work was funded by the US Fish & Wildlife Service through a $229,000 Wisconsin Department of Natural Resources Habitat Partnership grant. This Project was also supported financially by

Management Team Members, including the Wisconsin Potato & Vegetable Growers Association, Wisconsin Wetlands Association, Wisconsin Wildlife Federation, Montgomery Associates, and the Village of Plover.

- Natural Resource Conservation Service (NRCS) Regional Conservation Partnership Program. The Village of Plover and NRCS have partnered from 2019-2023 to provide financial and technical assistance to agricultural and forest producers who are located within the Little Plover River Watershed. This project will focus on the following resource concerns in the LPR Watershed: Excess/insufficient water, water quality degradation, inadequate habitat for fish and wildlife, soil erosion, and soil quality degradation. NRCS has agreed to provide $295,000 in funding for this effort, and the Village of Plover and its collaborating partners (Wisconsin Potato & Vegetable Growers Association, Wisconsin Wetlands Association, Wisconsin Wildlife Federation, and Montgomery Associates) have agreed to provide $328,000 in financial assistance/in-kind donations.

  The Village of Plover and NRCS will reach out to agricultural and forest producers through correspondence, newsletters, workshops and field tours to solicit participation in Environmental Quality Incentives Programs (EQUIP). The Village of Plover will primarily focus efforts on areas closest to the Little Plover River, with a secondary emphasis on other properties within the Little Plover River Watershed.

  Financial assistance will be provided to EQUIP participants who enter into a contract with NRCS to install and/or maintain conservation practices, activities, and/or supporting conservation practices.

- US Fish & Wildlife Partners For Fish and Wildlife Program Project. This project consists of upland and wetland habitat restoration projects, including restoring 73.5 acres of tallgrass prairie habitat for migratory grassland birds and waterfowl nesting, restoring 4 acres of wetland to improve ground water infiltration and improve wildlife habitat, and 2.5 acres of shrub and tree plantings that will benefit shrub and early successional woodland bird species. This work will occur on the Little Plover River Conservancy Area. The wetland scrapes and first phase of tallgrass prairie seed planting occurred in 2018. The balance of the project should be completed in 2019.

- Little Plover River Phase 3 Watershed Restoration Action Plan. The Village of Plover hired Montgomery Associates in 2018 to help evaluate and prioritize viable solutions to increase flow in the Little Plover River. In addition, Montgomery Associates was tasked with assisting the Village and the Project Management Team with pursuing additional funding for future implementation of LPR Watershed Plan recommendations. Montgomery Associates work will be completed in 2019 and should provide the Village and Project Management Team with additional options/projects that focus on improving Little Plover River flows and the overall health of the watershed.

  Funding for this work was provided by a WDNR Surface Water Grant Agreement, which was approved by the Wisconsin State Legislature and Governor as part of the 2017-2018 State Budget.

Between 2013 and 2016, the Wisconsin Geological and Natural History Survey and U.S. Geological Survey also worked to develop a groundwater flow and optimization model focused on the Little Plover River watershed. The final report, "A Groundwater Flow Model for the Little

Plover River Basin in Wisconsin's Central Sands" was issued in spring 2017. Throughout 2017, Wisconsin State Legislators have introduced a number of bills that would replicate this type of study in other portions of the Central Sands.

Section 5.3 Cultural Resource Inventory

The Village of Plover has a rich cultural heritage. It has served as the original County Seat for Portage County, been a site of expansive growth as a place to live and work, created opportunities to honor the history and accomplishments of the past, and used all of this to help focus on its future. The Village does not exist alone in this "sense of place". Plover is also very much a part of the larger Portage County history and community. The following information illustrates the inward and outward connections of this relationship.

A. Historical and Archeological Resources Within the Village

- Morgan House
- Wisconsin Korean War Veterans Memorial
- Veterans Memorial Park
- Heritage Park
- Sherman House
- Iber House
- Indian Burial mounds exist along the banks of the Little Plover River and the banks of the Wisconsin River

B. Cultural Resources

Heritage Park

In September 2000, the Village of Plover designated Heritage Park as an historic district, based on the regulations in place from the Village's Historic Preservation District Ordinance created in 1996. The Village Plan Commission also serves as the Historic Preservation Commission, and as such, only meets upon request.

The Portage County Historical Society is the sole owner of Heritage Park, which is bordered by Washington Avenue on the east, Willow Street on the south, Madison Avenue on the west, and Canadian National Railroad on the north. Directly west of Madison Avenue is the location of the original Village square when the community of Plover served as the County seat. The property now contains ten buildings, six of which have been restored and are open to the public for educational purposes, meetings, as well as museum displays. In 2022 a historic building onsite was renovated into the first ever Portage County Historical Society headquarters located at 2700 Madison Ave, Plover WI. Below is a listing of buildings within Heritage Park:

- The Old Plover Methodist Church – built in 1857 and original to the property, it has been restored as a museum, and is on the National Historic Register.
- Precourt Blacksmith Shop – built in 1880; moved to the site in 1985 from the Town of Buena Vista from one the earliest homesteads in Portage County. It has been completely restored and is used as demonstration purposes.
- Franklin/Calkins Homestead – built in 1857, moved to the site in 1983. It has been completely restored and is used as demonstration purposes.
- The Future General Store – built in 1880-82, the store was moved from downtown Plover to the park in 1992.

- The Post Office/ Doctors Office – built in 1870; moved to the park in 1990 from downtown Plover.
- The Hie Corner School – built in 1889 in Amherst; moved to the park in 1990. It is one of three remaining one-room schoolhouses in the County made of lumber. It has been completely restored and is used as demonstration and educational purposes.
- The Pierce Building – built in the 1880's; moved to the park in 1992.
- The Bancroft Depot – built in 1898 in Bancroft; moved to the park in 1991. It has been completely restored and is used as demonstration purposes.
- The Yellowstone Cabin – moved to the park in 2000.
- The "Circus House" – moved to the park in 2000, and serves to help preserve the circus history of Portage County and the State of Wisconsin.
- An attached barn for preservation of agricultural history was completed in 2017.

More information on the Heritage Park can be found at:
http://www.pchswi.org/museums/hpark/Heritagepark.html

Wisconsin Korean War Veterans Memorial

The Memorial is located on an island in Lake Pacawa, and pays tribute to the Wisconsinites that fought, died or those who are still listed as Missing in Action as a result of the Korean War. The Memorial includes:



Korean War Memorial

- *The Gateway to The Isle of Honor*. Upon passing thru the gateway, there is a short walk up the "Isle of Honor" walkway to the Memorial. Behind the Memorial walls is a small park with tables so you can relax and enjoy nature's peacefulness and beauty.

- *The Main Wall*. The Main Wall contains Memorial Tiles, dedicated in memory of a loved one that served in the Korean War Conflict. The initial wall was filled with tiles shortly after the dedication, prompting the construction of two additional walls.

- *The Statues*. The Memorial Statuary are composed of five larger than life figures. A Nurse leads the group, because without the dedication, compassion, and bravery of the Medics, many would not have returned. Following the Nurse are Army and Marine Infantrymen, because the Infantry bears the brunt of the battle. Then comes an Air Force Pilot and a Sailor, without whose support the battle would have soon been lost.

  The statues face east, because Korea is in the Far East, and in memory of all who lost their lives and are still missing in action. All five figures are touching, representing the brotherhood that comes from battle. There are no weapons on the Memorial - this is to confirm the veteran's wish for peace. The five figures stand in memory of all veterans who served the State of Wisconsin.

Funding for this Memorial comes solely from donations, sales of Memorial Tiles and other memorabilia sold during Memorial events. For more information contact the Plover Village Administrator. In 2022 in conjunction with the Lake Pacawa Park improvements, the memorial was renovated to incorporate extensive rip-rap around the entire island to mitigate ongoing erosion issues. Additionally, a new entrance plaque was designed and placed at the entrance of the island replacing the aging sign that previously stood at the entrance of the causeway.

Veteran's Memorial

This Memorial was constructed in memory of the war dead that were past members of VFW Post 10262 and American Legion Post 543 who served in the military. The Wall of Honor includes plaques depicting the Veterans of Foreign Wars and American Legion, each branch of military service, and three plaques listing those who died and the year of their death.



Wall of Honor

9-11 Memorial

The 9-11 Memorial was created to serve as a reminder of terrorist attacks on the Pentagon in Washington D.C., the World Trade Center towers in New York City, honors the victims of American Airlines flights 11 & 77 and United Airlines flights 175 & 93, and honors the 369 public and private firefighters/ EMT's and 72 police officers who lost their lives at the World Trade Center on that day. The focal point of the Memorial is a piece of I-beam from one of the Twin Towers. A Memorial Plaque was placed below the I-beam and reads as follows:

"September 11th, 2001. "Greater love hath no man than to lay down his life for his fellow man. This is a remnant of an iron girder from the World Trade Center in New York City. It is enshrined here in remembrance of those who gave the complete and final measure of courage and devotion. Their uncommon valor will serve as an enduring beacon guiding generations of future men and women who will also put the lives of others before their own. May all who pause here remember them with reverence and with renewed dedication to liberty and honor."

Grand Army of the Republic (GAR)

GAR was founded in Decatur, Illinois on April 6, 1866 by Benjamin F. Stephenson, with membership limited to honorably discharged veterans of the Union Army, Navy, Marine Corps or the Revenue Cutter Service who had served between April 12, 1861 and April 9, 1865. The Plover Cemetery, one of the oldest cemeteries in Portage County, contains the only GAR Civil War Memorial in the County. It was dedicated in 1897 – representing the 150 men, of which 21 were commissioned officers, who served in the Union Army. Plover Post No. 149 of the GAR was chartered on March 21, 1884. It was an extremely active social organization in the Village and Portage County for many years. By 1910 membership had greatly declined. It is in their memory that the Plover GAR erected its monument in the Plover Cemetery in 1897. The monument was restored in 2016 to preserve the history, culture, and heritage of Portage County and our community.

C. Cultural Resource Activities and Programs

The cultural aspect of community has continued to evolve over time, including celebration of historical events and places, local heroes (military, sports, public service, etc.), European, Asian, and Hispanic culture, and an increasing understanding of the creative arts and its impact on community economy and life.

Activities

- Heritage Days. Heritage Days is a free family event held on the third weekend in June each year to celebrate and educate residents of the history, heritage, and culture of the Plover community. The event is also to showcase the improvements to Heritage Park, information on new programs, displays and new publications on local history. Heritage Park is located next to the original County Seat square in Portage County. It is the only historical park in Wisconsin located in an urban environment.

- Celebrate Plover. Celebrate Plover's origins date back to Downtown Plover Days, Golden Sands Festival, and Freedom Fest. Those festivals were quite popular, however, as each year passed it became more difficult to find volunteers to organize and run them and by the late 1990's events at Lake Pacawa ended. In 2011 Sandy Lamb asked Village President Schlutter to bring back an event for families and the community at Lake Pacawa Park. To spur planning and preparation, Sandy offered to donate the proceeds from the Sandy's Golf Outing to this event. Village officials then assembled a volunteer committee to organize Celebrate Plover. Through the years the Celebrate Plover Foundation was established to help organize the annual event while providing fundraising opportunities for community activities and park improvements.

  Celebrate Plover's primary purpose is to bring the community together to celebrate Plover's past, present, and future. Celebrate Plover is designed to be a free event that is open to the public. The day's activities include a Veteran's tribute, a cooking competition sponsored by the Wisconsin Potato and Vegetable Growers Association, vendor market, craft show, outdoor business expo, live music, fire department water fights, volleyball tournaments, food, and beverages. There are also free children's activities and an amazing fireworks show at dusk with a unique water display on Lake Pacawa. The event is funded entirely by donations from local businesses. The Village of Plover and Celebrate Plover Foundation continuously looks to make improvements to the event to better provide for its residents and visitors. Celebrate Plover has traditionally been held each year on the last Saturday of July, yet in 2023 due to the increased interest of the community and its visitors, the event expanded into a two day event (Friday and Saturday) incorporating a Walk-Roll 5K and more activities.

- Hmong Community Celebration. The Hmong Community Celebration at Lake Pacawa Park is generally held annually. It is a cultural celebration, which includes sports, music, and other cultural events. Because of the park's size there are a number of available soccer fields, water activities, vendor space, outdoor band shell, as well as space for historical traditions.

- Patriot Band Concerts. Patriotic band concerts are performed by the Grenadier Band at 7:00 p.m. on the third Thursday of June, July, and August. Beginning in 2019, the Grenadier Band was invited to hold their concerts at the Band Shell at Lake Pacawa.

- "Plover Proud" Recognition Area. As part of the Lake Pacawa Park Master Plan, an area is being set aside to honor the achievements and accomplishments of Plover natives. Individuals may be honored for local, state, national, or international contributions. This area will be developed as funding becomes available to create this recognition area.

Programs

- CREATE Portage County. The Village also understands that Plover belongs to a larger cultural area, with resources and activities that its residents contribute to and take advantage of. CREATE Portage County is an organization whose purpose is to invest in arts and culture and boost business by driving people to the area. Representatives from CREATE have indicated they are creating a Comprehensive Art Plan for Portage County and would work with Plover planning officials to see what is specific about Plover to draw people to the area. The Plover Plan Commission and Village Board intend to explore and expand the role of culture in Village everyday life and economy and would welcome the opportunity to work with CREATE Portage County.

- Plover Area Convention and Visitors Bureau (PACVB). After decades of being incorporated within the Stevens Point Area Convention and Visitors Bureau (SPCVB), in 2022 the Village of Plover and Town of Plover through a variety of meetings and decisions established the Plover Area Convention and Visitors Bureau (PACVB). This monumental change allows Plover (Town and Village) to keep its room tax dollars to appropriately advertise for and promote Plover area businesses, activities, events, and features, often overlooked under the previous CVB structure. The Village looks forward to working with the newly created organization to promote all things Plover. Although Plover established its own CVB in 2022 to better promote area businesses and activities, PACVB hopes to collaborate with the SPCVB when appropriate to promote communal events and activities that benefit all the communities in the area.

- Wisconsin Historical Records Advisory Board (WHRAB). At the State level, the Wisconsin Historical Records Advisory Board (WHRAB) works in association with the Wisconsin Historical Society. The Board's activities fall primarily into three areas: it provides guidance and assistance to archives and records management programs in Wisconsin, promotes the value of historical records as keys to our cultural heritage and works through partnerships with statewide organizations whose purpose and goals support that end, and to bring federal grant funds to Wisconsin for improving access to and preservation of historical records.

Section 5.4 Agricultural/Natural/Cultural Resources Issues and Conclusions

A. Agricultural Resources

1. Agricultural land within the Village limits is intended to eventually be converted to "urban" uses and is considered a holding areas for future development both during and beyond the planning period. As the Village continues to grow, it will consider the potential impacts on agri-business as a result of converting productive agricultural land, while also balancing the need for new residential and commercial development.

2. Agri-business has been a strong component of the Village's history, Plover is interested in continuing growth in that sector of the economy while meeting the needs of the

community. The Village of Plover is home to many large agri-business facilities including but not limited to: Mullins Cheese, McCain Foods, Monogram, and Del-Monte creating thousands of jobs for those in and around the community.

3. With the growing interest and pressure for large scale renewable energy systems throughout the state and within Portage County, the Village of Plover should continue to work with surrounding communities to preserve productive agricultural lands while also allocating adequate lands for future growth and expansion.

B. Natural Resources

1. Due to its location and topography, development in the Village is generally not subject to limitations which would be imposed by flood plain, wetlands, steep slopes, high bedrock or unbuildable soils, yet some areas of the Village have high ground water which may limit different development types.

2. The Village is located in a mostly flat, sand plain environment. Significant agricultural and urban growth is replacing much of the woodland and wildlife habitat that previously existed, leaving pockets of wooded and natural areas throughout the Village. Due to their proximity to developed areas, these natural areas can result in conflicts between wildlife (deer, coyotes, etc), Village residents, and busy transportation corridors.

3. The Wisconsin River and Little Plover River corridors constitute the most valuable environmental corridors within and adjacent to the Village. Because these corridors represent a limited supply of special natural lands within and adjacent to the Village, their continued protection from the adverse effects of development is important.

4. The Village designed an open channel drainage system to address surface water drainage problems west of Business Highway 51/STH 54 and south of STH 54. The surface drainage problem (east of Business Highway 51/STH 54 and south of Cty Rd B) was addressed by the WisDOT when STH 54 was upgraded. In addition, development regulations for the protection of natural drainageways may be necessary to protect them and assure compatibility with future development.

5. With the development of a public water supply system, the protection of groundwater resources has become a major concern with the Village. In order to protect groundwater within the well recharge areas, the Village began implementation of Wellhead Protection Plan recommendations in 1992 with the adoption of the Wellhead Protection Ordinance. The Village has also implemented a adjustable pumping cycle that pulls from the wells farthest away from the Little Plover River during the hotter and dryer months to minimize the impacts of municipal water on groundwater recharge. The Village should also consider methods for reducing nitrate contribution to the groundwater supply and advocate land use patterns which minimize contributions of harmful levels of contaminants to the wells' recharge area.

6. The Village of Plover has responsibilities to its Village residents and businesses, which depend on the Village for a safe and adequate supply of water. Providing a safe and adequate supply of water means that the Village must take steps to ensure long-term access to high quality groundwater at a certain quantity. It also means that the Village must be a

good steward of this resource because the groundwater supply is not unlimited and how we use this valuable resource affects the environment as well as other users of groundwater.

C. Cultural Resources

1. The Plover Plan Commission and Village Board find cultural resources and activities to be a valuable part of community quality of life and ongoing economic development efforts. Steps need to be made to make sure cultural topics are part of the overall community development discussion, and that more attention is directed to these areas. This includes such topics as parks, community events and activities, redevelopment projects, transportation revitalization, etc.

2. Creation of a sculpture/art park should be pursued, whether publicly or privately funded, in locations to be determined.

3. The newly renovated Lake Pacawa Park should be used as an important hub for community activities for many years to come.

4. Improvements to Lake Pacawa and Wisconsin Korean War Veterans Memorial Parks have been mentioned as areas of focus for honoring Veterans as well as Plover residents who have made a difference in the Village of Plover and greater community.

5. The Village should utilize all information available for identifying cultural and historic resources within the Village to leverage these resources for community improvement and engagement.

Section 5.5 Agricultural/Natural/Cultural Resources Goals, Objectives, and Policies

A. Agricultural Goals, Objectives and Policies

The Village of Plover has a strong history of and ties to the agricultural community, the preservation of these crucial relationships will be important as the community grows and expands beyond its existing boundaries into agricultural lands.

1. Agricultural Resources Goal

   The Village shall continue to support the expansion and vitality of the Agri-business sector, where appropriate.

2. Agricultural Resources Objectives

   a. The Village will work with the agricultural community to efficiently and effectively discuss and implement the transition of appropriate agricultural lands to urban-type uses that provide a mutual benefit.

   b. The Village will incorporate adequate acreage within its future land use map, joint boundary agreement area, as well as other land use planning tools to accommodate the expansion of agri-businesses.

   c. The Village will collaborate with agricultural producers and businesses, where appropriate, to help educate the general public about the importance of farming.

3. Agricultural Resources Policies

    a. The Village will regularly meet with representatives of the agriculture and agri-business community to discuss the needs and future plans for those sectors.

B. Natural Resources Goals, Objectives and Policies

The Village's environmental resources include air, energy, land, water and wildlife. The growth projected for the Village will impact environmental resources. The Village should strive to protect environmental resources and maintain the ecological balance of the area, while also providing recreational and educational opportunities for its residents and visitors.

1. Natural Resources Goal

    To conserve, protect, and improve the environmental resources within and surrounding the Village for the general purpose of:

    a. Maintaining and improving natural diversity within and around the Village.

    b. Providing passive and active recreational opportunities for Village residents of all ages and abilities.

    c. Enhancing educational opportunities for Village and area residents.

    d. Enhancing the quality of life of existing and future Village residents.

    e. Protecting property values now and into the future.

2. Natural Resources Objectives

    a. Preserve good air quality, with the intent that existing and future air quality exceeds regulatory standards for the area.

    b. Increase public and private sector energy conservation in the Village.

    c. Preserve land resources possessing special environmental values or features.
    d. Maintain and improve the quality of surface water resources in and adjacent to the Village.

    e. Recognize the benefits that the preservation of wildlife habitat has on the Village and its contribution to the area's natural diversity.

    f. Preserve and enhance fish and wildlife habitat along the Wisconsin and Little Plover River corridors.

    g. Ensure environmental and aesthetic qualities are considered when development proposals are submitted.

    h. Continue to provide a management system that evaluates development proposals and applies specific policies and regulations for the purpose of making informed discussions related to the protection of the Village's natural land resources.

    i. Utilize Village resources, including adopted planning documents and ordinances, to manage the location, timing and type of land activities adjacent to lakes, streams and wetlands, for the purpose of mitigating and/or avoiding negative impacts to these areas.

j. Implement cost effective, energy efficient technology.

k. Explain, identify, and promote the usage of renewable energy sources.

l. Promote the preservation and restoration wetland and floodplain landscapes to promote improved wildlife habitat while also limiting flooding potential within the Little Plover River watershed.

3. Natural Resources Policies

a. Support the State's air quality standards as minimum guidelines for development.

b. Continuously evaluate the energy efficiency of municipal facilities and processes with the intent of implementing measures which can save energy and money. Examples include:

- Types of street lighting
- Lighting and maintenance of park and recreation facilities
- Road construction and maintenance
- Lighting and heating of municipal buildings
- Use of methane from the sewage treatment plant
- Performing energy audits of Village equipment and facilities
- Potential Biomass/Energy conversion facility

c. Promote education about energy issues and improvement opportunities.

d. Utilize land use (Subdivision, Zoning, etc) ordinances to preserve forested, ecologically sensitive, and other unique natural areas.

e. Utilize publicly owned land for open space needs whenever possible, and work with private landowners in providing public access to recreation areas.

f. Implement forest management practices on Village owned wooded areas based on best management practices, as recommended by the Wisconsin Department of Natural Resources.

g. Preserve natural areas that are acquired for wellhead protection.

h. Maintain and improve the water quality of the Wisconsin River.

- Continue to maintain or surpass the DNR's required standards for the wastewater treatment facility's effluent, which discharges into the Wisconsin River.
- Protect the Wisconsin River from wastewater discharges that would degrade water quality.

i. Maintain and improve the water quality and quantity of the Little Plover River.

j. The Village will work closely with local food processors, the agriculture industry, area residents, and environmental groups to maintain the delicate balance between the water resource and the needs of everyone who uses groundwater and depends on it.

k. Support measures aimed at improving the water quality of Lake Pacawa. The Village Board approved an updated Master Plan for Lake Pacawa of 2021 that is intended to enhance activities throughout the park as well as water quality within the lake. The Master Plan is intended to be implemented in phases. Public and private funding will be required to complete the Master Plan.

l. Promote the reduction or abatement of point and non-point source pollution of surface waters.

m. Identify and preserve areas having special wildlife habitat values.

n. Implement measures intended to protect fish and wildlife habitat as a part of Village projects, when such potential exists. Utilize the Village's park system to enhance wildlife habitat.

p. The Village should continue to use the Floodplain, Shoreland-Wetland and Zoning Ordinances as a means of protecting environmentally sensitive and unique areas from urban development. Amendments to such ordinances should be made as unique environmental issues or conflicts become apparent.

q. Maintain and reinforce, as necessary, the regulatory provisions of the Village's Conservancy Zoning District as a tool in implementing the goals, objectives and policies identified in this section.

r. Consider air quality performance standards in addition to State standards for proposed development, as deemed necessary by the Plan Commission and Village Board.

s. Support and promote educational programs which Village officials, residents and businesses can benefit from, including:

- Work sessions that utilize resources from the University of Wisconsin Extension, Wisconsin Public Service, UW Stevens Point, and other available agencies.
- Publicize notices of educational programs.
- Provide educational material in the Village's library and publicize information availability.

t. To address the current requirements of Wisconsin's recycling law, the Village should continue to work with Portage County and other available resources to continue a recycling program that best meets Plover's needs.

u. Maintain clean and safe drinking water within the municipal water system by regularly testing and treating (when necessary) for harmful contaminants.

C. Cultural Resources Goals, Objectives, and Policies

To ensure the Village continues to be an inviting, friendly, and unique community with a variety of activities, events, and destinations, it is crucial that it actively works with area partners to preserve, enhance, and promote historic and cultural resources now and into the future.

1. Cultural Resources Goals:

    a. Encourage the identification and protection of historic and cultural resources;

    b. Promote the arts as an integral part of our community;

    c. Educate the public of cultural resources and opportunities.

2. Cultural Resources Objectives

    a. Effectively accomplish the protection, enhancement and preservation of such improvements, sites, and districts, of which, represent or reflect elements of the Village's cultural, social, economic, political and architectural history.

    b. Safeguard the Village's historic and cultural heritage, as embodied and reflected in historic structures, events, sites, and districts.

    c. Develop site specific guidelines for protecting cultural and historic resources.

    d. Stabilize and improve property values and enhance the aesthetic character of the Village.

3. Cultural Resources Policies

    a. Protect and enhance the Village's historic improvements, sites, districts, and cultural heritage through the Historic Preservation Commission.

    b. The Village should support the efforts of the Portage County Historical Society.

    c. Explore the creation of a sub-committee or ad hoc committee charged with establishing methods or procedures for routinely including "culture" as a part of all community development discussions and decisions, and helping to establish goals and priorities for cultural programming implementation.

    d. The Village will work with CREATEportagecounty and the Plover Area Convention and Visitors Bureau to identify cultural resources and activities that benefit Village of Plover both internally and in relation to connection to the wider Portage County community.

    e. Encourage and facilitate, where possible, community events such as a music series, festivals, theater style performances, etc. at the band shell and other appropriate locations.

Appendix D

Opinion of Probable Costs

Village of Plover
Facility Plan
Plover, WI

SUMMARY

INITIAL COST ESTIMATE

ITEM	Initial Cost ($)	Change in Annual Cost ($)	TPW ($)
Base - Status Quo Upgrades	22,373,000	5,400	22,352,416
Activated Sludge Oxidation Ditch Upgrade			
Alternative 1 - Oxidation Ditch Equipment Replacement	4,801,000	0	4,801,000
Alternative 2 - Rectangular Aeration Tank Expar	14,770,000	0	13,825,264
WAS Thickening			
Alternative 1 - Gravity Belt Thickener	1,274,000	0	1,274,000
Alternative 2 - Rotary Drum Thickener	1,341,000	0	1,341,000
Aerobic Digestion			
Alternative 1 - Refurbishment and Equipment Replacement	2,419,000	0	2,419,000
Alternative 2 - Class A ATAD System	17,269,000	87,500	18,735,911
Biosolids Drying			
Alternative 1 - Paddle Dryer	17,257,000	200,000	20,779,532
Alternative 2 - Belt Dryer	20,627,000	200,000	24,149,532
Alternative 3 - Solar Dryer	6,460,000	76,892	8,036,799
Recommended Upgrades after Priority Review	26,066,000		

Village of Plover
Facility Plan
Plover, WI

Base - Status Quo Upgrades

INITIAL COST ESTIMATE

General Description

Recommended Condition Assessment Upgrades - See Report Table 2-2.

Summary of Project Cost

Estimated Construction Cost Without Contingency or Markup		$11,972,000
Contingency	30%	$3,591,600
Estimated Construction Cost Without Markup		$15,563,600
Contractor Overhead & Profit Markup	25%	$3,891,000
Estimated Construction Cost		$19,454,600
Engineering	15%	$2,918,000
Total Initial Cost		**$22,373,000**

Summary of Annual Costs and Salvage Values

Additional Annual Costs (initial year)	
O&M	$0
Additional Personnel	$0
Disposal Costs	$0
Electricity	$3,600
Natural Gas	$1,800
Chemicals	$0
Present Worth of Cumilative Annual Cost	**$113,676**
Present Worth Salvage Value from Piping and Structures	**-$134,260**

Total Present Worth $22,352,416

Village of Plover
Facility Plan
Plover, WI

INITIAL COST ESTIMATE 1

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Structure 05 - Site Improvements				$ 512,500
Structure 10 - Administration Building				$ 1,320,000
Structure 20 - Preliminary Treatment Building				$ 1,593,800
Structure 25 - Mixing Basins and Aeration Basins				$ 248,500
Structure 40 - Final Clarifiers & Control Building				$ 2,311,960
Structure 55 - Aeration Building				$ -
Structure 60 - Solids Handling Building				$ 767,250
Structure 70 - Sludge Storage Building				$ 344,750
Structure 80 - Aerobic Digester				$ 200,000
Structure 90 - Maintenance Storage Building Expansion				$ 1,640,000
Bonds, insurance & mobilization	%		**4%**	$ 337,050.40
Civil % Not Listed Above	%		**4%**	$ 337,050.40
Process & Yard Piping % Not Listed Above	%		**8%**	$ 674,100.80
Electrical % Not Listed Above	%		**8%**	$ 674,100.80
Instrumentation and Control % Not Listed Above	%		**6%**	$ 505,575.60
Plumbing % Not Listed Above	%		**3%**	$ 252,787.80
HVAC % Not Listed Above	%		**3%**	$ 252,787.80
Subtotal				**$ 11,972,214**

Village of Plover
Facility Plan
Plover, WI

Structure 05

Site Improvements

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Equipment				
New Septage Receiving Station	LS	1	357,500	357,500
Entry Gate with Controls	LS	1	25,000	25,000
Radio Telemetry Antenna and Cable	LS	1	20,000	20,000
Equipment				**402,500**
Construction				
Mill and overlay of site roads	sqyd	2,000	50	100,000
				0
Construction				**100,000**
Electrical				
Gate wiring and conduit for electrical and controls	LS	1	10,000	10,000
Electrical				**10,000**
				512,500

Village of Plover
Facility Plan
Plover, WI

Structure 10

Administration Building

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Equipment				
Office furnishing and equipment	LS	1	35,000	35,000
Plumbing and Fixtures	LS	1	35,000	35,000
				0
Equipment				**70,000**
Construction				
Existing Building renovation	sq ft	2,000	200	400,000
New Building: one story brick and block	sq ft	2,000	200	400,000
				0
Construction				**800,000**
Electrical				
SCADA Upgrade	LS	1	200,000	200,000
MCC Replacement	LS	1	50,000	50,000
Electrical and Lighting	LS	1	50,000	50,000
				0
Electrical				**300,000**
HVAC				
HVAC Equipment New and Replacement (AHU at grade)	LS	1	150,000	150,000
				0
HVAC				**150,000**
				1,320,000

Village of Plover
Facility Plan
Plover, WI

Structure 20

Preliminary Treatment Building

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Equipment				
Influent Pumps (5@1175gpm 40.5' TDH)	LS	5	78,000	390,000
8-inch Piping for Two Pumps	LS	1	30,000	30,000
Fine Screen	LS	1	390,000	390,000
Washer Compactor	LS	1	97,500	97,500
Grit Pump	LS	1	40,000	40,000
Grit Washer	LS	1	196,300	196,300
Slide Gates	EA	7	15,000	105,000
				0
Equipment				**1,248,800**
Construction				
Concrete Rehabilitation	LS	1	50,000	50,000
Pump Access Hatches	EA	2	15,000	30,000
Roof Replacement	LS	1	60,000	60,000
Coatings	LS	1	30,000	30,000
Construction				**170,000**
Electrical				
MCC Replacement	EA	1	50,000	50,000
Variable Frequency Drives	EA	5	5,000	25,000
				0
Electrical				**75,000**
HVAC				
HVAC Equipment Replacement (AHU at grade)	LS	1	100,000	100,000
				0
HVAC				**100,000**
				1,593,800

Village of Plover
Facility Plan
Plover, WI

Structure 25

Mixing Basins and Aeration Basins

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Equipment				
Gate replacement	EA	6	20,583	123,500
Aeration piping actuated valves	EA	4	10,000	40,000
Aeration piping flow meters	EA	4	5,000	20,000
Aeration piping modifications	LS	1	40,000	40,000
				0
Equipment				**223,500**
Construction				
Gate opening modifications	LS	1	10,000	10,000
				0
Construction				**10,000**
Electrical				
Wiring and conduit for control valves and flow meters	LS	1	15,000	15,000
				0
Electrical				**15,000**
				248,500

Village of Plover
Facility Plan
Plover, WI

Structure 40

Final Clarifiers & Control Building

ITEM	Units	Quantity	Unit Cost ($)	Cost ($)
Equipment				
UV Equipment Replacement	LS	1	542,360	542,360
Clarifier Mechanism Replacement	EA	2	422,500	845,000
Clarifier Launder and Weir Replacement	EA	2	161,800	323,600
24-inch Buried Plug Valves	EA	2	50,000	100,000
Screw Press Feed Pump Replacement	EA	1	50,000	50,000
W3 Valve and Pipe Replacement	LS	1	20,000	20,000
Equipment				**1,880,960**
Construction				
Coatings in Control Building	LS	1	30,000	30,000
Coatings - Clarifier Dome Covers	SF	9,000	14	126,000
Coatings - Sludge Holding Tank Cover	SF	5,000	14	70,000
Replace Doors and Louvers on Clarifier Domes	LS	1	10,000	10,000
Existing Clarifier Mechanism and Launder Removal	LS	1	30,000	30,000
Concrete Rehabilitation	LS	1	50,000	50,000
Construction				**316,000**
Electrical				
Wiring and Conduit for Replacement Clarifier Drives	LS	1	15,000	15,000
				0
Electrical				**15,000**
HVAC				
HVAC Equipment Replacement (AHU at grade)	LS	1	100,000	100,000
				0
HVAC				**100,000**
				2,311,960

Village of Plover
Facility Plan
Plover, WI

Structure 60

Solids Handling Building

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Equipment				
Conveyor to Cake Storage	EA	1	334,750	334,750
Screw Press Feed Piping Replacement	LF	250	250	62,500
Ferric Room Piping Replacement	LS	1	30,000	30,000
Ferric Pumps Replacement	LS	1	20,000	20,000
Equipment				**447,250**
Construction				
Roof Replacement	LS	1	60,000	60,000
Ferric Storage Tank Inspection	LS	1	5,000	5,000
Construction				**65,000**
Electrical				
MCC Replacement	LS	1	50,000	50,000
Backup Generator Replacement	LS	1	100,000	100,000
Ferric Level Monitoring Replacement	LS	1	5,000	5,000
Electrical				**155,000**
HVAC				
HVAC Equipment Replacement (AHU at grade)	LS	1	100,000	100,000
				0
HVAC				**100,000**
				767,250

Village of Plover
Facility Plan
Plover, WI

Structure 70

Sludge Storage Building

ITEM	Units	Quantity	Unit Cost ($)	Cost ($)
Equipment				
Shaftless Screw Conveyor Distributor	EA	1	334,750	334,750
Equipment				**334,750**
Construction				
				0
				0
Construction				**0**
Electrical				
Wiring and conduit for replacement conveyor	LS	1	10,000	10,000
Electrical				**10,000**
				344,750

Village of Plover
Facility Plan
Plover, WI

Structure 80

Aerobic Digester

ITEM	Units	Quantity	Unit Cost ($)	Cost ($)
Equipment				
	EA			
Equipment				**0**
Construction				
Roof Replacement	LS	1	50,000	50,000
Construction				**50,000**
Electrical				
MCC Replacement	LS	1	50,000	50,000
				0
Electrical				**50,000**
HVAC				
HVAC Equipment Replacement (AHU at grade)	LS	1	100,000	100,000
				0
HVAC				**100,000**
				200,000

Village of Plover
Facility Plan
Plover, WI

Structure 90

Maintenance Storage Building Expansion

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Equipment				
Equipment				**0**
Construction				
Overhead sectional doors	EA	4	15,000	60,000
Pre-engineered metal building	sq ft	6,000	250	1,500,000
Construction				**1,560,000**
Electrical				
Electrical and lighting	LS	1	30,000	30,000
Electrical				**30,000**
HVAC				
HVAC Equipment	LS	1	50,000	50,000
HVAC				**50,000**
				1,640,000

Village of Plover
Facility Plan
Plover, WI

ANNUAL O&M COST ESTIMATE

Equiment Maintanance

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Labor

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Disposal

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Electricity

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Admin Bdg Addition	LS	1	2,400.00	2,400
Storage Bdg Addition	LS	1	1,200.00	1,200

Natural Gas

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Admin Bdg Addition	LS	1	1,200.00	1,200
Storage Bdg Addition	LS	1	600.00	600

Chemicals

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Revenue

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Village of Plover
Facility Plan
Plover, WI

Base - Status Quo Upgrades

Present Worth Analysis Factors

Discount Rate	**2.5%**	DNR established
Inflation Rate	**2.2%**	2012 to 2021 average
Escalation Rate (Above Inflation)		
Electricity (0-5 years)	**0.5%**	
Electricity (6-20 years)	**1.0%**	
Natural Gas	**1.5%**	
Chemicals	**0.0%**	

Comments

Life Cycle Cost Analysis

Initial Cost 22,373,000

Year	Periodic Costs		Annual Operational Costs and Revenue								PW	PW	PW
(n)	Replace	Salvage	Equipment Maint.	Labor	Disposal Costs	Electricity	Natural Gas	Chemical	Revenue	Total Annual Cost	Periodic	Annual	Cumulative
0	0	0	0	0	0	3,600	1,800	0	0	5,400	0	1	22,373,001
1		0	0	0	0	3,695	1,866	0	0	5,561	0	5,425	22,378,426
2		0	0	0	0	3,793	1,934	0	0	5,727	0	5,451	22,383,878
3		0	0	0	0	3,894	2,004	0	0	5,898	0	5,477	22,389,355
4		0	0	0	0	3,997	2,078	0	0	6,075	0	5,503	22,394,858
5		0	0	0	0	4,103	2,153	0	0	6,256	0	5,530	22,400,388
6		0	0	0	0	4,212	2,232	0	0	6,444	0	5,556	22,405,944
7		0	0	0	0	4,323	2,313	0	0	6,637	0	5,583	22,411,527
8		0	0	0	0	4,438	2,398	0	0	6,836	0	5,610	22,417,138
9		0	0	0	0	4,555	2,485	0	0	7,041	0	5,638	22,422,776
10		0	0	0	0	4,676	2,576	0	0	7,252	0	5,665	22,428,441
11		0	0	0	0	4,800	2,670	0	0	7,470	0	5,693	22,434,134
12		0	0	0	0	4,927	2,768	0	0	7,695	0	5,722	22,439,856
13		0	0	0	0	5,058	2,869	0	0	7,927	0	5,750	22,445,606
14		0	0	0	0	5,192	2,973	0	0	8,165	0	5,779	22,451,385
15		0	0	0	0	5,330	3,082	0	0	8,411	0	5,808	22,457,193
16		0	0	0	0	5,471	3,194	0	0	8,665	0	5,837	22,463,030
17		0	0	0	0	5,616	3,311	0	0	8,927	0	5,867	22,468,896
18		0	0	0	0	5,765	3,432	0	0	9,196	0	5,896	22,474,793
19		0	0	0	0	5,917	3,557	0	0	9,474	0	5,926	22,480,719
20		-220,000	0	0	0	6,074	3,687	0	0	9,761	-134,260	5,957	22,352,416

20-Year Present Worth	**22,352,416**

Base - Status Quo Upgrades	
Initial Cost	22,373,000
20-Year Present Worth	22,352,416
Average Annual Cost	7,471

Notes

Village of Plover
Facility Plan
Plover, WI

Activated Sludge Oxidation Ditch Upgrade
Alternative 1 - Oxidation Ditch Equipment Replacement

INITIAL COST ESTIMATE

General Description
Replacement in kind of the existing oxidation ditch aeration equipment and minor structural refurbishment

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Architectural/Structural				
Earthwork	See Worksheet for Detailed Cost Breakdown			0
Concrete	See Worksheet for Detailed Cost Breakdown			0
Metals	See Worksheet for Detailed Cost Breakdown			0
Buildings	See Worksheet for Detailed Cost Breakdown			0
Demoltion	See Worksheet for Detailed Cost Breakdown			0
Oxidation Ditch Aeration Equipment Replacement	LS	1	1,846,000	1,846,000
Demolition of existing aerators	LS	1	30,000	30,000
Wiring and Conduit for Replacement Aerators	LS	1	20,000	20,000
Concrete Rehabilitation	LS	1	50,000	50,000
Maintenance Gantry for Inner Equipment	LS	1	30,000	30,000
Subtotal				1,976,000
Bonds, insurance & mobilization	Each		4%	79,040
Civil (Not Included Above)	Each		4%	79,040
Process-Mechanical (Not Included Above)	Each		8%	158,080
Electrical (Not Listed Above)	Each		8%	158,080
Instrumentation and Control (Not Listed Above)	Each		6%	118,560
Plumbing (Not Listed Above)	Each		0%	0
HVAC (Not Listed Above)	Each		0%	0
Subtotal				2,568,800
Contingency			30%	770,640
Subtotal				3,339,440
Contractor Overhead & Profit			25%	834,860
Total Construction Cost				**4,174,300**
Engineering			15%	626,145
Total Initial Cost				**4,801,000**

Village of Plover
Facility Plan
Plover, WI

Activated Sludge Oxidation Ditch Upgrade

ANNUAL O&M COST ESTIMATE

Equipment Maintenance

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated	hours	0	0	

Disposal

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated	Tons			

Labor

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Electricity

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Natural Gas

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Chemicals

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Revenue

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Village of Plover
Facility Plan
Plover, WI

Alternative 1- Activated Sludge Selector and Aeration Tank Replacement

Present Worth Analysis Factors

Discount Rate	**2.5%**	DNR established
Inflation Rate	**2.2%**	2012 to 2021 average
Escalation Rate (Above Inflation)		
Electricity (0-5 years)	**0.5%**	
Electricity (6-20 years)	**1.0%**	
Natural Gas	**1.5%**	
Chemicals	**0.0%**	

Comments

Life Cycle Cost Analysis

Initial Cost	4,801,000

Year	Periodic Costs		Annual Operational Costs and Revenue								PW	PW	PW
(n)	Replace	Salvage	Equipment Maint.	Labor	Diposal Costs	Electricity	Natural Gas	Chemicals	Revenue	Total Annual Cost	Periodic	Annual	Cumulative
0	0	0	0	0	0	0	0	0	0	0	0	0	4,801,000
1		0	0	0	0	0	0	0	0	0	0	0	4,801,000
2		0	0	0	0	0	0	0	0	0	0	0	4,801,000
3		0	0	0	0	0	0	0	0	0	0	0	4,801,000
4		0	0	0	0	0	0	0	0	0	0	0	4,801,000
5		0	0	0	0	0	0	0	0	0	0	0	4,801,000
6		0	0	0	0	0	0	0	0	0	0	0	4,801,000
7		0	0	0	0	0	0	0	0	0	0	0	4,801,000
8		0	0	0	0	0	0	0	0	0	0	0	4,801,000
9		0	0	0	0	0	0	0	0	0	0	0	4,801,000
10		0	0	0	0	0	0	0	0	0	0	0	4,801,000
11		0	0	0	0	0	0	0	0	0	0	0	4,801,000
12		0	0	0	0	0	0	0	0	0	0	0	4,801,000
13		0	0	0	0	0	0	0	0	0	0	0	4,801,000
14		0	0	0	0	0	0	0	0	0	0	0	4,801,000
15		0	0	0	0	0	0	0	0	0	0	0	4,801,000
16		0	0	0	0	0	0	0	0	0	0	0	4,801,000
17		0	0	0	0	0	0	0	0	0	0	0	4,801,000
18		0	0	0	0	0	0	0	0	0	0	0	4,801,000
19		0	0	0	0	0	0	0	0	0	0	0	4,801,000
20		0	0	0	0	0	0	0	0	0	0	0	4,801,000

20-Year Present Worth	**4,801,000**

Alternative 1- Activated Sludge Selector and Aeration Tank Replacement	
Initial Cost	4,801,000
20-Year Present Worth	4,801,000
Average Annual Cost	0

Notes

Village of Plover
Facility Plan
Plover, WI

Activated Sludge Oxidation Ditch Upgrade
Alternative 2 - Rectangular Aeration Tank Expansion

INITIAL COST ESTIMATE

General Description
Expansion of the rectangular aeration basins and demolition of the oxidation ditch structure

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Architectural/Structural				
Earthwork/Site Construction	See Worksheet for Detailed Cost Breakdown			438,733
Concrete	See Worksheet for Detailed Cost Breakdown			2,367,006
Metals	See Worksheet for Detailed Cost Breakdown			139,495
Buildings	See Worksheet for Detailed Cost Breakdown			239,113
Demoltion - Oxidation Ditch	See Worksheet for Detailed Cost Breakdown			900,000
Slide Gates	EA	12	18,000	216,000
Membrane diffuser systems	EA	4	97,500	390,000
DO and ORP probes	EA	8	5,000	40,000
ALP piping and valves	LS	1	160,000	160,000
Modulating aeration control valves	EA	12	10,000	120,000
RAS piping and valves	LS	1	80,000	80,000
Weirs	EA	4	5,000	20,000
Blower Bdg HVAC System Modifications	LS	1	50,000	50,000
Aeration blowers	EA	3	117,000	351,000
ALP piping and valves	LS	1	250,000	250,000
Remove existing Oxidation Ditch Equipment	LS	1	50,000	50,000
Subtotal				5,811,347
Bonds, insurance & mobilization	Each		4%	232,454
Civil (Not Included Above)	Each		4%	232,454
Process-Mechanical (Not Included Above)	Each		8%	464,908
Electrical (Not Listed Above)	Each		8%	464,908
Instrumentation and Control (Not Listed Above)	Each		6%	348,681
Plumbing (Not Listed Above)	Each		3%	174,340
HVAC (Not Listed Above)	Each		3%	174,340
Subtotal				7,903,431
Contingency			30%	2,371,029
Subtotal				10,274,461
Contractor Overhead & Profit			25%	2,568,615
Total Construction Cost				**12,843,076**
Engineering			15%	1,926,461
Total Initial Cost				**14,770,000**

Village of Plover
Facility Plan
Plover, WI

Activated Sludge Oxidation Ditch Upgrade

ARCHITECTURAL/STRUCTURAL WORKSHEET

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Aeration Basin Site Construction				
Structure Excavation	CY	18,661	15	279,916
Backfill	CY	3,047	15	45,702
Haul Excess Excavation stay on site	CY	15,614	6	93,685
Blower Building Expansion				
Structure Excavation	CY	781	15	11,710
Backfill	CY	337	15	5,060
Haul Excess Excavation stay on site	CY	443	6	2,660
Earthwork/Site Construction				**438,733**
Aeration Basin Concrete				
Base Slab	CY	586	800	468,427
18" Walls	CY	1,066	1,400	1,492,820
Walkway	CY	127	1,800	228,880
Blower Building Concrete				
Base Slab	CY	74	800	59,111
12" Walls	CY	49	1,400	68,756
Columns and Beams	LS	1	30,000	30,000
8" Precast Hollow-Core Plank	SF	761	25	19,013
Concrete				**2,367,006**
Aeration basin: grating, railings, stairs, ladder	LF	1,383	90	124,495
Blower building: grating, railings, stairs, ladder	LS	1	15,000	15,000
Metals				**139,495**
Aeration Basin				
coatings	LS	1	30,000	30,000
Aeration Basin Site Construction				
Blower Building Buildings				
Block and brick building	SF	761	200	152,100
EPDM roofing and insulation	SF	761	25	19,013
Doors	EA	2	4,000	8,000
Coatings	LS	1	30,000	30,000
Buildings				**239,113**
Demo: Existing Oxidation Ditch	CF	75,000	12	900,000
Demoltion - Oxidation Ditch				**900,000**

Village of Plover
Facility Plan
Plover, WI

Activated Sludge Oxidation Ditch Upgrade

ANNUAL O&M COST ESTIMATE

Equipment Maintenance

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated	hours	0	0	

Disposal

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated	Tons			

Labor

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Electricity

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Natural Gas

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Chemicals

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Revenue

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Village of Plover
Facility Plan
Plover, WI

Alternative 1- Activated Sludge Selector and Aeration Tank Replacement

Present Worth Analysis Factors

Discount Rate	**2.5%**	DNR established
Inflation Rate	**2.2%**	2012 to 2021 average
Escalation Rate (Above Inflation)		
Electricity (0-5 years)	**0.5%**	
Electricity (6-20 years)	**1.0%**	
Natural Gas	**1.5%**	
Chemicals	**0.0%**	

Comments

Life Cycle Cost Analysis

Initial Cost	14,770,000

Year	Periodic Costs		Annual Operational Costs and Revenue								PW	PW	PW
(n)	Replace	Salvage	Equipment Maint.	Labor	Diposal Costs	Electricity	Natural Gas	Chemicals	Revenue	Total Annual Cost	Periodic	Annual	Cumulative
0	0	0	0	0	0	0	0	0	0	0	0	0	14,770,000
1		0	0	0	0	0	0	0	0	0	0	0	14,770,000
2		0	0	0	0	0	0	0	0	0	0	0	14,770,000
3		0	0	0	0	0	0	0	0	0	0	0	14,770,000
4		0	0	0	0	0	0	0	0	0	0	0	14,770,000
5		0	0	0	0	0	0	0	0	0	0	0	14,770,000
6		0	0	0	0	0	0	0	0	0	0	0	14,770,000
7		0	0	0	0	0	0	0	0	0	0	0	14,770,000
8		0	0	0	0	0	0	0	0	0	0	0	14,770,000
9		0	0	0	0	0	0	0	0	0	0	0	14,770,000
10		0	0	0	0	0	0	0	0	0	0	0	14,770,000
11		0	0	0	0	0	0	0	0	0	0	0	14,770,000
12		0	0	0	0	0	0	0	0	0	0	0	14,770,000
13		0	0	0	0	0	0	0	0	0	0	0	14,770,000
14		0	0	0	0	0	0	0	0	0	0	0	14,770,000
15		0	0	0	0	0	0	0	0	0	0	0	14,770,000
16		0	0	0	0	0	0	0	0	0	0	0	14,770,000
17		0	0	0	0	0	0	0	0	0	0	0	14,770,000
18		0	0	0	0	0	0	0	0	0	0	0	14,770,000
19		0	0	0	0	0	0	0	0	0	0	0	14,770,000
20		-1,548,059	0	0	0	0	0	0	0	0	-944,736	0	13,825,264

20-Year Present Worth	**13,825,264**

Alternative 1- Activated Sludge Selector and Aeration Tank Replacement	
Initial Cost	14,770,000
20-Year Present Worth	13,825,264
Average Annual Cost	0

Notes

Village of Plover
Facility Plan
Plover, WI

WAS Thickening
Alternative 1 - Gravity Belt Thickener

INITIAL COST ESTIMATE

General Description
Replacement in kind of the existing WAS thickening equipment

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Architectural/Structural				
Earthwork	See Worksheet for Detailed Cost Breakdown			0
Concrete	See Worksheet for Detailed Cost Breakdown			0
Metals	See Worksheet for Detailed Cost Breakdown			0
Buildings	See Worksheet for Detailed Cost Breakdown			0
Demoltion	See Worksheet for Detailed Cost Breakdown			0
Gravity Belt Thickener	LS	1	453,960	453,960
Polymer system	LS	1	62,400	62,400
Subtotal				516,360
Bonds, insurance & mobilization	Each		4%	20,654
Civil (Not Included Above)	Each		0%	0
Process-Mechanical (Not Included Above)	Each		8%	41,309
Electrical (Not Listed Above)	Each		8%	41,309
Instrumentation and Control (Not Listed Above)	Each		6%	30,982
Plumbing (Not Listed Above)	Each		3%	15,491
HVAC (Not Listed Above)	Each		3%	15,491
Subtotal				681,595
Contingency			30%	204,479
Subtotal				886,074
Contractor Overhead & Profit			25%	221,518
Total Construction Cost				**1,107,592**
Engineering			15%	166,139
Total Initial Cost				**1,274,000**

Village of Plover
Facility Plan
Plover, WI

WAS Thickening

ANNUAL O&M COST ESTIMATE

Equipment Maintenance

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated	hours	0	0	

Disposal

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated	Tons			

Labor

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Electricity

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Natural Gas

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Chemicals

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Revenue

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Village of Plover
Facility Plan
Plover, WI

WAS Thickening

Present Worth Analysis Factors

Discount Rate	**2.5%**	DNR established
Inflation Rate	**2.2%**	2012 to 2021 average
Escalation Rate (Above Inflation)		
Electricity (0-5 years)	**0.5%**	
Electricity (6-20 years)	**1.0%**	
Natural Gas	**1.5%**	
Chemicals	**0.0%**	

Comments

Life Cycle Cost Analysis

Initial Cost 1,274,000

Year	Periodic Costs		Annual Operational Costs and Revenue								PW	PW	PW
(n)	Replace	Salvage	Equipment Maint.	Labor	Diposal Costs	Electricity	Natural Gas	Chemicals	Revenue	Total Annual Cost	Periodic	Annual	Cumulative
0	0	0	0	0	0	0	0	0	0	0	0	0	1,274,000
1		0	0	0	0	0	0	0	0	0	0	0	1,274,000
2		0	0	0	0	0	0	0	0	0	0	0	1,274,000
3		0	0	0	0	0	0	0	0	0	0	0	1,274,000
4		0	0	0	0	0	0	0	0	0	0	0	1,274,000
5		0	0	0	0	0	0	0	0	0	0	0	1,274,000
6		0	0	0	0	0	0	0	0	0	0	0	1,274,000
7		0	0	0	0	0	0	0	0	0	0	0	1,274,000
8		0	0	0	0	0	0	0	0	0	0	0	1,274,000
9		0	0	0	0	0	0	0	0	0	0	0	1,274,000
10		0	0	0	0	0	0	0	0	0	0	0	1,274,000
11		0	0	0	0	0	0	0	0	0	0	0	1,274,000
12		0	0	0	0	0	0	0	0	0	0	0	1,274,000
13		0	0	0	0	0	0	0	0	0	0	0	1,274,000
14		0	0	0	0	0	0	0	0	0	0	0	1,274,000
15		0	0	0	0	0	0	0	0	0	0	0	1,274,000
16		0	0	0	0	0	0	0	0	0	0	0	1,274,000
17		0	0	0	0	0	0	0	0	0	0	0	1,274,000
18		0	0	0	0	0	0	0	0	0	0	0	1,274,000
19		0	0	0	0	0	0	0	0	0	0	0	1,274,000
20		0	0	0	0	0	0	0	0	0	0	0	1,274,000

20-Year Present Worth	**1,274,000**

WAS Thickening	
Initial Cost	1,274,000
20-Year Present Worth	1,274,000
Average Annual Cost	0

Notes

Village of Plover
Facility Plan
Plover, WI

WAS Thickening
Alternative 2 - Rotary Drum Thickener

INITIAL COST ESTIMATE

General Description
Upgrade existing WAS thickening equipment with Rotary drum thickener

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Architectural/Structural				
Earthwork	See Worksheet for Detailed Cost Breakdown			0
Concrete	See Worksheet for Detailed Cost Breakdown			0
Metals	See Worksheet for Detailed Cost Breakdown			0
Buildings	See Worksheet for Detailed Cost Breakdown			0
Demoltion	See Worksheet for Detailed Cost Breakdown			0
Rotary Drum Thickener	LS	1	481,000	481,000
Polymer system	LS	1	62,400	62,400
Subtotal				543,400
Bonds, insurance & mobilization	Each		4%	21,736
Civil (Not Included Above)	Each		0%	0
Process-Mechanical (Not Included Above)	Each		8%	43,472
Electrical (Not Listed Above)	Each		8%	43,472
Instrumentation and Control (Not Listed Above)	Each		6%	32,604
Plumbing (Not Listed Above)	Each		3%	16,302
HVAC (Not Listed Above)	Each		3%	16,302
Subtotal				717,288
Contingency			30%	215,186
Subtotal				932,474
Contractor Overhead & Profit			25%	233,119
Total Construction Cost				**1,165,593**
Engineering			15%	174,839
Total Initial Cost				**1,341,000**

Village of Plover
Facility Plan
Plover, WI

WAS Thickening

ANNUAL O&M COST ESTIMATE

Equipment Maintenance

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated	hours	0	0	

Disposal

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated	Tons			

Labor

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Electricity

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Natural Gas

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Chemicals

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Revenue

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Village of Plover
Facility Plan
Plover, WI

WAS Thickening

Present Worth Analysis Factors

Discount Rate	**2.5%**	DNR established
Inflation Rate	**2.2%**	2012 to 2021 average
Escalation Rate (Above Inflation)		
Electricity (0-5 years)	**0.5%**	
Electricity (6-20 years)	**1.0%**	
Natural Gas	**1.5%**	
Chemicals	**0.0%**	

Comments

Life Cycle Cost Analysis

Initial Cost 1,341,000

Year	Periodic Costs		Annual Operational Costs and Revenue								PW	PW	PW
(n)	Replace	Salvage	Equipment Maint.	Labor	Diposal Costs	Electricity	Natural Gas	Chemicals	Revenue	Total Annual Cost	Periodic	Annual	Cumulative
0	0	0	0	0	0	0	0	0	0	0	0	0	1,341,000
1		0	0	0	0	0	0	0	0	0	0	0	1,341,000
2		0	0	0	0	0	0	0	0	0	0	0	1,341,000
3		0	0	0	0	0	0	0	0	0	0	0	1,341,000
4		0	0	0	0	0	0	0	0	0	0	0	1,341,000
5		0	0	0	0	0	0	0	0	0	0	0	1,341,000
6		0	0	0	0	0	0	0	0	0	0	0	1,341,000
7		0	0	0	0	0	0	0	0	0	0	0	1,341,000
8		0	0	0	0	0	0	0	0	0	0	0	1,341,000
9		0	0	0	0	0	0	0	0	0	0	0	1,341,000
10		0	0	0	0	0	0	0	0	0	0	0	1,341,000
11		0	0	0	0	0	0	0	0	0	0	0	1,341,000
12		0	0	0	0	0	0	0	0	0	0	0	1,341,000
13		0	0	0	0	0	0	0	0	0	0	0	1,341,000
14		0	0	0	0	0	0	0	0	0	0	0	1,341,000
15		0	0	0	0	0	0	0	0	0	0	0	1,341,000
16		0	0	0	0	0	0	0	0	0	0	0	1,341,000
17		0	0	0	0	0	0	0	0	0	0	0	1,341,000
18		0	0	0	0	0	0	0	0	0	0	0	1,341,000
19		0	0	0	0	0	0	0	0	0	0	0	1,341,000
20		0	0	0	0	0	0	0	0	0	0	0	1,341,000

20-Year Present Worth	**1,341,000**

WAS Thickening	
Initial Cost	1,341,000
20-Year Present Worth	1,341,000
Average Annual Cost	0

Notes

Village of Plover
Facility Plan
Plover, WI

Aerobic Digestion
Alternative 1 - Refurbishment

INITIAL COST ESTIMATE

General Description
Refurbish the existing aerobic digesters and maintain a Class B land application program

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Architectural/Structural				
Earthwork	See Worksheet for Detailed Cost Breakdown			0
Concrete	See Worksheet for Detailed Cost Breakdown			0
Metals	See Worksheet for Detailed Cost Breakdown			0
Buildings	See Worksheet for Detailed Cost Breakdown			0
Demoltion	See Worksheet for Detailed Cost Breakdown			0
Aerobic Digester Blower Replacement	EA	2	97,500	195,000
Sludge Holding Tank Blower Replacement	EA	3	65,000	195,000
Piping and valve modifications	LS	1	50,000	50,000
Aeration Diffuser System replacement	EA	3	50,000	150,000
Sludge Holding Tank piping and walkway	LS	1	70,000	70,000
ORP and DO Probe replacement	EA	6	6,000	36,000
Digester Mixer replacement	EA	3	58,500	175,500
Digester concrete refurbishment	LS	1	50,000	50,000
Wiring and conduit for replacement equipment	LS	1	30,000	30,000
Subtotal				951,500
Bonds, insurance & mobilization	Each		4%	38,060
Civil (Not Included Above)	Each		4%	38,060
Process-Mechanical (Not Included Above)	Each		8%	76,120
Electrical (Not Listed Above)	Each		8%	76,120
Instrumentation and Control (Not Listed Above)	Each		6%	57,090
Plumbing (Not Listed Above)	Each		3%	28,545
HVAC (Not Listed Above)	Each		3%	28,545
Subtotal				1,294,040
Contingency			30%	388,212
Subtotal				1,682,252
Contractor Overhead & Profit			25%	420,563
Total Construction Cost				**2,102,815**
Engineering			15%	315,422
Total Initial Cost				**2,419,000**

Village of Plover
Facility Plan
Plover, WI

Aerobic Digestion

ANNUAL O&M COST ESTIMATE

Equipment Maintenance

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated	hours	0	0	

Disposal

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated	Tons			

Labor

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Electricity

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Natural Gas

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Chemicals

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated				

Revenue

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Village of Plover
Facility Plan
Plover, WI

Aerobic Digestion

Present Worth Analysis Factors

Discount Rate	2.5%	DNR established
Inflation Rate	2.2%	2012 to 2021 average
Escalation Rate (Above Inflation)		
Electricity (0-5 years)	0.5%	
Electricity (6-20 years)	1.0%	
Natural Gas	1.5%	
Chemicals	0.0%	

Comments

Life Cycle Cost Analysis

Initial Cost 2,419,000

Year	Periodic Costs		Annual Operational Costs and Revenue								PW	PW	PW
(n)	Replace	Salvage	Equipment Maint.	Labor	Diposal Costs	Electricity	Natural Gas	Chemicals	Revenue	Total Annual Cost	Periodic	Annual	Cumulative
0	0	0	0	0	0	0	0	0	0	0	0	0	2,419,000
1		0	0	0	0	0	0	0	0	0	0	0	2,419,000
2		0	0	0	0	0	0	0	0	0	0	0	2,419,000
3		0	0	0	0	0	0	0	0	0	0	0	2,419,000
4		0	0	0	0	0	0	0	0	0	0	0	2,419,000
5		0	0	0	0	0	0	0	0	0	0	0	2,419,000
6		0	0	0	0	0	0	0	0	0	0	0	2,419,000
7		0	0	0	0	0	0	0	0	0	0	0	2,419,000
8		0	0	0	0	0	0	0	0	0	0	0	2,419,000
9		0	0	0	0	0	0	0	0	0	0	0	2,419,000
10		0	0	0	0	0	0	0	0	0	0	0	2,419,000
11		0	0	0	0	0	0	0	0	0	0	0	2,419,000
12		0	0	0	0	0	0	0	0	0	0	0	2,419,000
13		0	0	0	0	0	0	0	0	0	0	0	2,419,000
14		0	0	0	0	0	0	0	0	0	0	0	2,419,000
15		0	0	0	0	0	0	0	0	0	0	0	2,419,000
16		0	0	0	0	0	0	0	0	0	0	0	2,419,000
17		0	0	0	0	0	0	0	0	0	0	0	2,419,000
18		0	0	0	0	0	0	0	0	0	0	0	2,419,000
19		0	0	0	0	0	0	0	0	0	0	0	2,419,000
20		0	0	0	0	0	0	0	0	0	0	0	2,419,000

20-Year Present Worth	**2,419,000**

Aerobic Digestion	
Initial Cost	2,419,000
20-Year Present Worth	2,419,000
Average Annual Cost	0

Notes

Village of Plover
Facility Plan
Plover, WI

Aerobic Digestion
Alternative 2 - Class A ATAD System

INITIAL COST ESTIMATE

General Description
Upgrade existing aerobic digesters to a new autothermal thermophilic aerobic digestion (ATAD) process that would produce Class A biosolids.

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Architectural/Structural				
Earthwork	See Worksheet for Detailed Cost Breakdown			127,755
Concrete	See Worksheet for Detailed Cost Breakdown			719,251
Metals	See Worksheet for Detailed Cost Breakdown			0
Buildings	See Worksheet for Detailed Cost Breakdown			450,000
Demoltion	See Worksheet for Detailed Cost Breakdown			0
Aerobic Digester Equipment	LS	1	5,189,600	5,189,600
SNDR Tank Cover	LS	1	258,018	258,018
Piping and Valve modification	LS	1	50,000	50,000
Subtotal				6,794,624
Bonds, insurance & mobilization	Each		4%	271,785
Civil (Not Included Above)	Each		4%	271,785
Process-Mechanical (Not Included Above)	Each		8%	543,570
Electrical (Not Listed Above)	Each		8%	543,570
Instrumentation and Control (Not Listed Above)	Each		6%	407,677
Plumbing (Not Listed Above)	Each		3%	203,839
HVAC (Not Listed Above)	Each		3%	203,839
Subtotal				9,240,688
Contingency			30%	2,772,206
Subtotal				12,012,894
Contractor Overhead & Profit			25%	3,003,224
Total Construction Cost				**15,016,118**
Engineering			15%	2,252,418
Total Initial Cost				**17,269,000**

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Aerobic Digestion

ARCHITECTURAL/STRUCTURAL WORKSHEET

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
SNDR Tank Excavation	CY	3,334	15	50,006
SNDR Tank backfill	CY	1,920	15	28,800
SNDR Tank Haul Excess Excavation	CY	1,414	6	8,482
New Digester Equipment Building Excavation	CY	1,093	15	16,400
New Digester Equipment Building Backfill	CY	427	15	6,400
New Digester Equipment Building Haul Excess	CY	667	6	4,000
New Biofilter Tank Excavation	CY	556	15	8,333
New Biofilter Tank Backfill	CY	222	15	3,333
New Biofilter Tank Haul Excess Excavation	CY	333	6	2,000
Earthwork				**127,755**
SNDR Tank base slab	CY	236	800	188,496
SNDR Tank 18" Walls	CY	157	1,400	220,400
New Digester Equipment Building Base Slab	CY	111	800	88,889
New Digester Equipment Building Walls	CY	64	1,400	89,600
New Digester Equipment Building Columns and	LS	1	30,000	30,000
New Biofilter Tank Base Slab	CY	67	800	53,333
New Biofilter Tank Walls	CY	35	1,400	48,533
Concrete				**719,251**
Metals:	ls			
Metals:	ft			
Metals:	risers			
Metals:	sq ft			
Metals:	sq ft			
Metals				**0**
Building: New Digester Equipment Building	sq ft	1,500	300	450,000
Building:	ea			
Building:	sq ft			
Building:	sq ft			
Building:	sq ft			
Buildings				**450,000**
New Digester Equipment Building Backfill	CY	0	15	0
Demo:	LS			
Demo:	LS			
Demo:	LS			
Demoltion				**0**

Village of Plover
Facility Plan
Plover, WI

Aerobic Digestion
Alternative 2 - Class A ATAD System

ANNUAL O&M COST ESTIMATE

Equipment Maintenance

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Supplies and Equipment	LS	1	20,000	20,000

Disposal

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Land Application Cost Savings	LS	1	-10,000.00	-10,000

Labor

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
ATAD Operation	Hrs	400	50	20,000
ATAD Maintenance	Hrs	150	50	7,500

Electricity

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Additional Electricity	kWhr/yr	454,545	0.11	50,000

Natural Gas

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
No change anticipated	Therms	0	1.00	0

Chemicals

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Revenue

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Village of Plover
Facility Plan
Plover, WI

Aerobic Digestion

Present Worth Analysis Factors

Discount Rate	**2.5%**	DNR established
Inflation Rate	**2.2%**	2012 to 2021 average
Escalation Rate (Above Inflation)		
Electricity (0-5 years)	**0.5%**	
Electricity (6-20 years)	**1.0%**	
Natural Gas	**1.5%**	
Chemicals	**0.0%**	

Comments

Life Cycle Cost Analysis

Initial Cost	17,269,000

Year	Periodic Costs		Annual Operational Costs and Revenue								PW	PW	PW
(n)	Replace	Salvage	Equipment Maint.	Labor	Diposal Costs	Electricity	Natural Gas	Chemicals	Revenue	Total Annual Cost	Periodic	Annual	Cumulative
0	0	0	20,000	27,500	-10,000	50,000	0	0	0	87,500	0	87,500	17,356,500
1		0	20,430	28,091	-10,150	51,325	0	0	0	89,696	0	87,508	17,444,008
2		0	20,869	28,695	-10,302	52,685	0	0	0	91,947	0	87,517	17,531,525
3		0	21,318	29,312	-10,457	54,081	0	0	0	94,255	0	87,525	17,619,050
4		0	21,776	29,942	-10,614	55,514	0	0	0	96,619	0	87,532	17,706,582
5		0	22,244	30,586	-10,773	56,985	0	0	0	99,043	0	87,540	17,794,122
6		0	22,723	31,244	-10,934	58,496	0	0	0	101,528	0	87,547	17,881,669
7		0	23,211	31,915	-11,098	60,046	0	0	0	104,074	0	87,554	17,969,223
8		0	23,710	32,602	-11,265	61,637	0	0	0	106,684	0	87,561	18,056,783
9		0	24,220	33,303	-11,434	63,270	0	0	0	109,359	0	87,567	18,144,350
10		0	24,741	34,019	-11,605	64,947	0	0	0	112,101	0	87,573	18,231,923
11		0	25,273	34,750	-11,779	66,668	0	0	0	114,911	0	87,579	18,319,502
12		0	25,816	35,497	-11,956	68,435	0	0	0	117,792	0	87,585	18,407,087
13		0	26,371	36,260	-12,136	70,248	0	0	0	120,744	0	87,590	18,494,678
14		0	26,938	37,040	-12,318	72,110	0	0	0	123,770	0	87,596	18,582,273
15		0	27,517	37,836	-12,502	74,021	0	0	0	126,872	0	87,601	18,669,874
16		0	28,109	38,650	-12,690	75,982	0	0	0	130,051	0	87,606	18,757,480
17		0	28,713	39,481	-12,880	77,996	0	0	0	133,310	0	87,610	18,845,090
18		0	29,331	40,330	-13,073	80,063	0	0	0	136,650	0	87,615	18,932,705
19		0	29,961	41,197	-13,270	82,184	0	0	0	140,073	0	87,619	19,020,325
20		-609,626	30,605	42,082	-13,469	84,362	0	0	0	143,582	-372,037	87,624	18,735,911

20-Year Present Worth	**18,735,911**

Aerobic Digestion	
Initial Cost	17,269,000
20-Year Present Worth	18,735,911
Average Annual Cost	114,653

Notes

Village of Plover
Facility Plan
Plover, WI

Biosolids Drying
Alternative 1 - Paddle Dryer

INITIAL COST ESTIMATE

General Description
Addition of biosolids drying with a paddle dryer

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Architectural/Structural				
Earthwork	See Worksheet for Detailed Cost Breakdown			92,533
Concrete	See Worksheet for Detailed Cost Breakdown			777,215
Metals	See Worksheet for Detailed Cost Breakdown			50,000
Buildings	See Worksheet for Detailed Cost Breakdown			2,180,000
Demoltion	See Worksheet for Detailed Cost Breakdown			0
Paddle Dryer	LS	1	3,640,000	3,640,000
Piping and Valves	LS	1	50,000	50,000
Subtotal				6,789,748
Bonds, insurance & mobilization	Each		4%	271,590
Civil (Not Included Above)	Each		4%	271,590
Process-Mechanical (Not Included Above)	Each		8%	543,180
Electrical (Not Listed Above)	Each		8%	543,180
Instrumentation and Control (Not Listed Above)	Each		6%	407,385
Plumbing (Not Listed Above)	Each		3%	203,692
HVAC (Not Listed Above)	Each		3%	203,692
Subtotal				9,234,057
Contingency			30%	2,770,217
Subtotal				12,004,275
Contractor Overhead & Profit			25%	3,001,069
Total Construction Cost				**15,005,343**
Engineering			15%	2,250,802
Total Initial Cost				**17,257,000**

Village of Plover
Facility Plan
Plover, WI

Biosolids Drying

ARCHITECTURAL/STRUCTURAL WORKSHEET

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Earthwork: Excavation	cu yds	4,018	15	60,267
Earthwork: Backfill	cu yds	907	15	13,600
Sitework: Haul Excess Excavation stay on site	cu yds	3,111	6	18,667
Earthwork				**92,533**
Concrete: Base Slab	cu yds	519	800	414,815
Concrete: Walls	cu yds	216	1,400	302,400
Concrete: Columns and Beams	LS	1	30,000	30,000
Concrete Refurbishment	LS	1	30,000	30,000
Concrete				**777,215**
Metals:	LS	1	50,000	50,000
Metals				**50,000**
Building: One Story Brick and Block	sq ft	7,000	300	2,100,000
Building: Coatings	LS	1	80,000	80,000
Buildings				**2,180,000**
Demo:	LS			
Demoltion				**0**

Village of Plover
Facility Plan
Plover, WI

Biosolids Drying

ANNUAL O&M COST ESTIMATE

Equipment Maintenance

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Supplies and Equipment	LS	1	20,000	20,000

Disposal

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Land Application Cost Savings	LS	1	-35,000.00	-35,000

Labor

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Dryer Operation	Hrs	1,500	50	75,000
Dryer Maintenance	Hrs	300	50	15,000

Electricity

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Additional Electricity	kWhr/yr	272,727	0.11	30,000

Natural Gas

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Thermal Dryer Natural Gas	Therms	95,000	1.00	95,000

Chemicals

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Revenue

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Village of Plover
Facility Plan
Plover, WI

Biosolids Drying

Present Worth Analysis Factors

Discount Rate	**2.5%**	DNR established
Inflation Rate	**2.2%**	2012 to 2021 average
Escalation Rate (Above Inflation)		
Electricity (0-5 years)	**0.5%**	
Electricity (6-20 years)	**1.0%**	
Natural Gas	**1.5%**	
Chemicals	**0.0%**	

Comments

Life Cycle Cost Analysis

Initial Cost	17,257,000

Year	Periodic Costs		Annual Operational Costs and Revenue								PW	PW	PW
(n)	Replace	Salvage	Equipment Maint.	Labor	Diposal Costs	Electricity	Natural Gas	Chemicals	Revenue	Total Annual Cost	Periodic	Annual	Cumulative
0	0	0	20,000	90,000	-35,000	30,000	95,000	0	0	200,000	0	200,000	17,457,000
1		0	20,430	91,935	-35,525	30,795	98,468	0	0	206,102	0	201,076	17,658,076
2		0	20,869	93,912	-36,058	31,611	102,062	0	0	212,396	0	202,161	17,860,237
3		0	21,318	95,931	-36,599	32,449	105,787	0	0	218,885	0	203,257	18,063,494
4		0	21,776	97,993	-37,148	33,309	109,648	0	0	225,578	0	204,363	18,267,856
5		0	22,244	100,100	-37,705	34,191	113,650	0	0	232,481	0	205,479	18,473,336
6		0	22,723	102,252	-38,271	35,097	117,798	0	0	239,600	0	206,607	18,679,942
7		0	23,211	104,451	-38,845	36,027	122,098	0	0	246,943	0	207,744	18,887,687
8		0	23,710	106,696	-39,427	36,982	126,555	0	0	254,516	0	208,893	19,096,580
9		0	24,220	108,990	-40,019	37,962	131,174	0	0	262,328	0	210,053	19,306,633
10		0	24,741	111,334	-40,619	38,968	135,962	0	0	270,385	0	211,225	19,517,858
11		0	25,273	113,727	-41,228	40,001	140,924	0	0	278,697	0	212,407	19,730,265
12		0	25,816	116,172	-41,847	41,061	146,068	0	0	287,271	0	213,602	19,943,867
13		0	26,371	118,670	-42,474	42,149	151,400	0	0	296,115	0	214,808	20,158,676
14		0	26,938	121,222	-43,111	43,266	156,926	0	0	305,240	0	216,026	20,374,702
15		0	27,517	123,828	-43,758	44,412	162,653	0	0	314,653	0	217,257	20,591,959
16		0	28,109	126,490	-44,414	45,589	168,590	0	0	324,364	0	218,500	20,810,459
17		0	28,713	129,210	-45,081	46,798	174,744	0	0	334,384	0	219,755	21,030,214
18		0	29,331	131,988	-45,757	48,038	181,122	0	0	344,721	0	221,023	21,251,237
19		0	29,961	134,825	-46,443	49,311	187,733	0	0	355,387	0	222,304	21,473,542
20		-1,503,607	30,605	137,724	-47,140	50,617	194,585	0	0	366,392	-917,608	223,598	20,779,532

20-Year Present Worth	**20,779,532**

Biosolids Drying	
Initial Cost	17,257,000
20-Year Present Worth	20,779,532
Average Annual Cost	278,822

Notes

Village of Plover
Facility Plan
Plover, WI

Biosolids Drying
Alternative 2 - Belt Dryer

INITIAL COST ESTIMATE

General Description
Addition of biosolids drying with a belt dryer

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Architectural/Structural				
Earthwork	See Worksheet for Detailed Cost Breakdown			92,533
Concrete	See Worksheet for Detailed Cost Breakdown			777,215
Metals	See Worksheet for Detailed Cost Breakdown			50,000
Buildings	See Worksheet for Detailed Cost Breakdown			2,180,000
Demoltion	See Worksheet for Detailed Cost Breakdown			0
Belt Dryer	LS	1	4,966,000	4,966,000
Piping and Valves	LS	1	50,000	50,000
Subtotal				8,115,748
Bonds, insurance & mobilization	Each		4%	324,630
Civil (Not Included Above)	Each		4%	324,630
Process-Mechanical (Not Included Above)	Each		8%	649,260
Electrical (Not Listed Above)	Each		8%	649,260
Instrumentation and Control (Not Listed Above)	Each		6%	486,945
Plumbing (Not Listed Above)	Each		3%	243,472
HVAC (Not Listed Above)	Each		3%	243,472
Subtotal				11,037,417
Contingency			30%	3,311,225
Subtotal				14,348,643
Contractor Overhead & Profit			25%	3,587,161
Total Construction Cost				**17,935,803**
Engineering			15%	2,690,371
Total Initial Cost				**20,627,000**

Village of Plover
Facility Plan
Plover, WI

Biosolids Drying

ARCHITECTURAL/STRUCTURAL WORKSHEET

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Earthwork: Excavation	cu yds	4,018	15	60,267
Earthwork: Backfill	cu yds	907	15	13,600
Sitework: Haul Excess Excavation stay on site	cu yds	3,111	6	18,667
Earthwork				**92,533**
Concrete: Base Slab	cu yds	519	800	414,815
Concrete: Walls	cu yds	216	1,400	302,400
Concrete: Columns and Beams	LS	1	30,000	30,000
Concrete Refurbishment	LS	1	30,000	30,000
Concrete				**777,215**
Metals:	LS	1	50,000	50,000
Metals				**50,000**
Building: One Story Brick and Block	sq ft	7,000	300	2,100,000
Building: Coatings	LS	1	80,000	80,000
Buildings				**2,180,000**
Demo: Existing Storage facilities	LS			
Demoltion				**0**

Village of Plover
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Plover, WI

Biosolids Drying
Alternative 2 - Belt Dryer

ANNUAL O&M COST ESTIMATE

Equipment Maintenance

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Supplies and Equipment	LS	1	20,000	20,000

Disposal

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Land Application Cost Savings	LS	1	-35,000.00	-35,000

Labor

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Dryer Operation	Hrs	1,500	50	75,000
Dryer Maintenance	Hrs	300	50	15,000

Electricity

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Additional Electricity	kWhr/yr	272,727	0.11	30,000

Natural Gas

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Thermal Dryer Natural Gas	Therms	95,000	1.00	95,000

Chemicals

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Revenue

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Village of Plover
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Plover, WI

Biosolids Drying

Present Worth Analysis Factors

Discount Rate	**2.5%**	DNR established
Inflation Rate	**2.2%**	2012 to 2021 average
Escalation Rate (Above Inflation)		
Electricity (0-5 years)	**0.5%**	
Electricity (6-20 years)	**1.0%**	
Natural Gas	**1.5%**	
Chemicals	**0.0%**	

Comments

Life Cycle Cost Analysis

Initial Cost	20,627,000

Year	Periodic Costs		Annual Operational Costs and Revenue								PW	PW	PW
(n)	Replace	Salvage	Equipment Maint.	Labor	Diposal Costs	Electricity	Natural Gas	Chemicals	Revenue	Total Annual Cost	Periodic	Annual	Cumulative
0	0	0	20,000	90,000	-35,000	30,000	95,000	0	0	200,000	0	200,000	20,827,000
1		0	20,430	91,935	-35,525	30,795	98,468	0	0	206,102	0	201,076	21,028,076
2		0	20,869	93,912	-36,058	31,611	102,062	0	0	212,396	0	202,161	21,230,237
3		0	21,318	95,931	-36,599	32,449	105,787	0	0	218,885	0	203,257	21,433,494
4		0	21,776	97,993	-37,148	33,309	109,648	0	0	225,578	0	204,363	21,637,856
5		0	22,244	100,100	-37,705	34,191	113,650	0	0	232,481	0	205,479	21,843,336
6		0	22,723	102,252	-38,271	35,097	117,798	0	0	239,600	0	206,607	22,049,942
7		0	23,211	104,451	-38,845	36,027	122,098	0	0	246,943	0	207,744	22,257,687
8		0	23,710	106,696	-39,427	36,982	126,555	0	0	254,516	0	208,893	22,466,580
9		0	24,220	108,990	-40,019	37,962	131,174	0	0	262,328	0	210,053	22,676,633
10		0	24,741	111,334	-40,619	38,968	135,962	0	0	270,385	0	211,225	22,887,858
11		0	25,273	113,727	-41,228	40,001	140,924	0	0	278,697	0	212,407	23,100,265
12		0	25,816	116,172	-41,847	41,061	146,068	0	0	287,271	0	213,602	23,313,867
13		0	26,371	118,670	-42,474	42,149	151,400	0	0	296,115	0	214,808	23,528,676
14		0	26,938	121,222	-43,111	43,266	156,926	0	0	305,240	0	216,026	23,744,702
15		0	27,517	123,828	-43,758	44,412	162,653	0	0	314,653	0	217,257	23,961,959
16		0	28,109	126,490	-44,414	45,589	168,590	0	0	324,364	0	218,500	24,180,459
17		0	28,713	129,210	-45,081	46,798	174,744	0	0	334,384	0	219,755	24,400,214
18		0	29,331	131,988	-45,757	48,038	181,122	0	0	344,721	0	221,023	24,621,237
19		0	29,961	134,825	-46,443	49,311	187,733	0	0	355,387	0	222,304	24,843,542
20		-1,503,607	30,605	137,724	-47,140	50,617	194,585	0	0	366,392	-917,608	223,598	24,149,532

20-Year Present Worth	**24,149,532**

Biosolids Drying	
Initial Cost	20,627,000
20-Year Present Worth	24,149,532
Average Annual Cost	278,822

Notes

Village of Plover
Facility Plan
Plover, WI

Biosolids Drying
Alternative 3 - Solar Dryer

INITIAL COST ESTIMATE

General Description
Addition of biosolids drying with a solar dryer

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Architectural/Structural				
Earthwork	See Worksheet for Detailed Cost Breakdown			37,860
Concrete	See Worksheet for Detailed Cost Breakdown			477,867
Metals	See Worksheet for Detailed Cost Breakdown			0
Buildings	See Worksheet for Detailed Cost Breakdown			0
Demoltion	See Worksheet for Detailed Cost Breakdown			0
Solar Dryer	LS	1	1,976,000	1,976,000
Piping and Valves	LS	1	50,000	50,000
Subtotal				2,541,727
Bonds, insurance & mobilization	Each		4%	101,669
Civil (Not Included Above)	Each		4%	101,669
Process-Mechanical (Not Included Above)	Each		8%	203,338
Electrical (Not Listed Above)	Each		8%	203,338
Instrumentation and Control (Not Listed Above)	Each		6%	152,504
Plumbing (Not Listed Above)	Each		3%	76,252
HVAC (Not Listed Above)	Each		3%	76,252
Subtotal				3,456,748
Contingency			30%	1,037,024
Subtotal				4,493,773
Contractor Overhead & Profit			25%	1,123,443
Total Construction Cost				**5,617,216**
Engineering			15%	842,582
Total Initial Cost				**6,460,000**

Village of Plover
Facility Plan
Plover, WI

Biosolids Drying
Alternative 3 - Solar Dryer

ARCHITECTURAL/STRUCTURAL WORKSHEET

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Greenhouse excavation	cu yds	1,710	15	25,650
Greenhouse backfill	cu yds	217	15	3,250
Greenhouse Haul Excess Excavation stay on sit	cu yds	1,493	6	8,960
Earthwork:				
Earthwork:				
Earthwork:				
Earthwork				**37,860**
Concrete: Greenhouse Slab	cu yds	597	800	477,867
Concrete	cu yds			
Concrete				**477,867**
Metals:	ls			
Metals:	ft			
Metals:	risers			
Metals:	sq ft			
Metals:	sq ft			
Metals				**0**
Building:	sq ft			
Buildings				**0**
Demo:	LS			
Demoltion				**0**

Village of Plover
Facility Plan
Plover, WI

Biosolids Drying
Alternative 3 - Solar Dryer

ANNUAL O&M COST ESTIMATE

Equipment Maintenance

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Supplies and Equipment	LS	1	10,000	10,000

Disposal

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Land Application Cost Savings	LS	1	-25,000.00	-25,000

Labor

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Dryer Operation	Hrs	500	50	25,000
Dryer Maintenance	Hrs	200	50	10,000

Electricity

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Additional Electricity	kWhr/yr	136,363	0.11	15,000
Solar Dryer	kWh/yr	17,200	0.11	1,892

Natural Gas

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)
Additional Natural Gas	Therms	40,000	1.00	40,000

Chemicals

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Revenue

ITEM	Units	Annual Quantity	Unit Cost ($)	Annual Cost ($)

Village of Plover
Facility Plan
Plover, WI

Biosolids Drying

Present Worth Analysis Factors

Discount Rate	**2.5%**	DNR established
Inflation Rate	**2.2%**	2012 to 2021 average
Escalation Rate (Above Inflation)		
Electricity (0-5 years)	**0.5%**	
Electricity (6-20 years)	**1.0%**	
Natural Gas	**1.5%**	
Chemicals	**0.0%**	

Comments

Life Cycle Cost Analysis

Initial Cost	6,460,000

Year	Periodic Costs		Annual Operational Costs and Revenue								PW	PW	PW
(n)	Replace	Salvage	Equipment Maint.	Labor	Diposal Costs	Electricity	Natural Gas	Chemicals	Revenue	Total Annual Cost	Periodic	Annual	Cumulative
0	0	0	10,000	35,000	-25,000	16,892	40,000	0	0	76,892	0	76,892	6,536,892
1		0	10,215	35,753	-25,375	17,340	41,460	0	0	79,392	0	77,456	6,614,348
2		0	10,435	36,521	-25,756	17,799	42,973	0	0	81,973	0	78,023	6,692,370
3		0	10,659	37,306	-26,142	18,271	44,542	0	0	84,636	0	78,593	6,770,963
4		0	10,888	38,108	-26,534	18,755	46,168	0	0	87,385	0	79,167	6,850,130
5		0	11,122	38,928	-26,932	19,252	47,853	0	0	90,223	0	79,744	6,929,873
6		0	11,361	39,765	-27,336	19,762	49,599	0	0	93,151	0	80,324	7,010,197
7		0	11,606	40,620	-27,746	20,286	51,410	0	0	96,175	0	80,908	7,091,106
8		0	11,855	41,493	-28,162	20,823	53,286	0	0	99,295	0	81,496	7,172,602
9		0	12,110	42,385	-28,585	21,375	55,231	0	0	102,517	0	82,088	7,254,690
10		0	12,370	43,296	-29,014	21,942	57,247	0	0	105,842	0	82,684	7,337,374
11		0	12,636	44,227	-29,449	22,523	59,337	0	0	109,275	0	83,283	7,420,657
12		0	12,908	45,178	-29,890	23,120	61,502	0	0	112,818	0	83,887	7,504,543
13		0	13,186	46,149	-30,339	23,733	63,747	0	0	116,476	0	84,494	7,589,037
14		0	13,469	47,142	-30,794	24,362	66,074	0	0	120,252	0	85,106	7,674,143
15		0	13,759	48,155	-31,256	25,007	68,486	0	0	124,151	0	85,722	7,759,865
16		0	14,054	49,191	-31,725	25,670	70,985	0	0	128,176	0	86,342	7,846,207
17		0	14,357	50,248	-32,201	26,350	73,576	0	0	132,331	0	86,967	7,933,175
18		0	14,665	51,329	-32,684	27,048	76,262	0	0	136,621	0	87,596	8,020,771
19		0	14,981	52,432	-33,174	27,765	79,045	0	0	141,049	0	88,230	8,109,001
20		-263,933	15,303	53,559	-33,671	28,501	81,931	0	0	145,622	-161,071	88,869	8,036,799

20-Year Present Worth	**8,036,799**

Biosolids Drying	
Initial Cost	6,460,000
20-Year Present Worth	8,036,799
Average Annual Cost	109,368

Notes

Appendix E

Site Investigation

State of Wisconsin / DEPARTMENT OF NATURAL RESOURCES

Tony Evers, Governor
Karen Hyun, Ph.D., Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

101 S. Webster St.
Box 7921
Madison, WI 53707-7921

December 28, 2025

Nathan Cassity
Donohue & Associated, Inc
3311 Weeden Creek Road
Sheboygan WI 53081

SUBJECT: Endangered Resources Review (ERR Log # 25-856)
Proposed Village of Plover Facility Plan Amendment, Portage County, WI (T23N R08E S19)

Dear Nathan Cassity,

The Bureau of Natural Heritage Conservation has reviewed the proposed project described in the Endangered Resources (ER) Review Request received November 14, 2025. The complete ER Review for this proposed project is attached and follow-up actions are summarized below:

Required Actions: 2 species
Recommended Actions: 0 species
No Follow-Up Actions: 8 species
Additional Recommendations Specified: Yes

This ER Review may contain Natural Heritage Inventory data (http://dnr.wi.gov/topic/NHI), including specific locations of endangered resources, which are considered sensitive and are not subject toWisconsin's Open Records Law. Information contained in this ER Review may be shared with individuals who need this information in order to carry out specific roles in the planning, permitting, and implementation of the proposed project. **Specific locations of endangered resources may not be released or reproduced in any publicly disseminated documents.**

The attached ER Review is for informational purposes and only addresses endangered resources issues. **This ER Review does not constitute DNR authorization of the proposed project and does not exempt the project from securing necessary permits and approvals from the DNR and/or other permitting authorities.** Please contact the ER Review Program whenever the project plans change, new details become available, or more than a year has passed to confirm if results of this ER Review are still valid.

Please contact me at 608-419-2005 or via email at anna.rossler@wi.gov if you have any questions about this ER Review.

Sincerely,

Anna Rossler
Endangered Resources Review Program

cc:

Endangered Resources Review for the Proposed Village of Plover Facility Plan Amendment, Portage County (ER Log # 25-856)

Section A. Location and brief description of the proposed project

Based on information provided by the ER Review Request form and attached materials, the proposed project consists of the following:

Location	Portage County - T23N R08E S19
Project Description	The proposed project includes the construction of additional wastewater unit processes just right, no more than 350ft, of the existing fence line of the wastewater treatment plant. The new work would remain on already City owned land. new unit processes include new aeration basins extended to the right from the existing basins and a new storage facility to the southwest corner of the existing fence.
Project Timing	N/A
Current Habitat	Existing Wastewater Facility
Impacts to Wetlands or Waterbodies	Wisconsin River adjacent to the site. Work is not anticipated to impact this waterbody
Property Type	Public
Federal Nexus	No

It is best to request ER Reviews early in the project planning process. However, some important project details may not be known at that time. Details related to project location, design, and timing of disturbance are important for determining both the endangered resources that may be impacted by the project and any necessary follow-up actions. Please contact the ER Review Program whenever the project plans change, new details become available, or more than a year has passed to confirm if results of this ER Review are still valid.

Section B. Endangered resources recorded from within the project area and surrounding area

	Group	State Status	Federal Status
Bald Eagle *(Haliaeetus leucocephalus)*	Bird~		
Red-shouldered Hawk *(Buteo lineatus)*	Bird~	THR	
Karner Blue *(Lycaeides melissa samuelis)*	Butterfly	SC/FL	LE
Sand Prairie *(Sand prairie)*	Community	NA	
Floodplain Forest *(Floodplain forest)*	Community~	NA	
Riverine Lake/Pond *(Riverine lake/pond)*	Community~	NA	
Redfin Shiner *(Lythrurus umbratilis)*	Fish~	THR	
Karner Blue Butterfly High Potential Range	Other	NA	HPR
Missouri Rock-cress *(Boechera missouriensis)*	Plant	SC	
Grassleaf Rush *(Juncus marginatus)*	Plant~	SC	

For additional information on the rare species, high-quality natural communities, and other endangered resources listed above, please visit our Biodiversity (http://dnr.wi.gov/topic/EndangeredResources/biodiversity.html) page. For further definitions of state and federal statuses (END=Endangered, THR=Threatened, SC=Special Concern), please refer to the Natural Heritage Inventory (NHI) Working List (http://dnr.wi.gov/topic/nhi/wlist.html).

Section C. Follow-up actions

Actions that need to be taken to comply with state and/or federal endangered species laws:

• Karner Blue (*Lycaeides melissa samuelis*) - Butterfly

State Status: SC/FL **Federal Status:** LE

Impact Type	Impact possible
Required Measures	Other
Description of Required Measures	Please see the Karner Blue Butterfly High Potential Range section for guidance.

• Karner Blue Butterfly High Potential Range - Other

State Status: NA **Federal Status:** HPR

Impact Type	Impact possible
Required Measures	Surveys,Other
Description of Required Measures	The project is located within the Karner Blue Butterfly (KBB) High Potential Range. The wild lupine (Lupinus perennis) is the host plant for this species and suitable habitat may be present at the project site. Therefore, one of the below guidance must be followed: A. Send in on the ground photos without snow cover. It is preferable that photos are from spring or summer. It may be possible for species experts to determine habitat suitability from photos. If it can be determined there is no suitable habitat, no actions would be required. However, if suitable habitat is present or if a determination cannot be made, the below surveys (Option B) must be followed. B. Surveys 1. Wild lupine surveys will need to be conducted by a certified surveyor, (https://widnr.widen.net/view/pdf/oizrclcnvu/NH_Review_KBBSurveyors.pdf?t.download=true&u=kkadwx) from green-up to July 31 and prior to any ground disturbance at the site. If lupine is not present on the site, then no further action for the butterfly is necessary. Lupine survey forms can be found at the WDNR KBB HCP website (https://dnr.wi.gov/topic/endangeredresources/karner/access.html). 2. If lupine is identified at the project site, additional surveys will be required to determine the presence of the Karner Blue Butterfly. These surveys must be conducted by a certified surveyor (same link as in #1) during the two peak flight periods (roughly late May - late June and mid July - late August; https://dnr.wisconsin.gov/topic/endangeredresources/karner/access). If KBBs are not present on site, then no further action for the butterfly is necessary. Both wild lupine and KBB survey results should be submitted to the Endangered Resources Review Program. If the Karner Blue Butterfly is present on or near the site, please coordinate with the U.S. Fish and Wildlife Service (952-252-0092) or the WDNR HCP Coordinator (Rebecca.Roth@wisconsin.gov) on measures to avoid impacts to the butterfly. If avoidance of all occupied habitat is not possible and the project may result in take of the butterfly, the applicant should become a partner to the Wisconsin Statewide KBB Habitat Conservation Plan (HCP).

Actions recommended to help conserve Wisconsin's Endangered Resources: None

Remember that although these actions are not required by state or federal endangered species laws, they may be required by other laws, permits, granting programs, or policies of this or another agency. Examples include the federal Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, State Natural Areas law, DNR Chapter 30 Wetland and Waterway permits, DNR Stormwater permits, and Forest Certification.

Additional Recommendations

Please note that plastic or polypropylene netting associated with erosion matting (also known as an erosion control blankets or erosion mesh netting) without independent movement of strands can easily entrap snakes and other wildlife moving through the area, and cause dehydration, desiccation, and eventually mortality. Biodegradable jute/twine netting with the "leno" or "gauze" weave (contains strands that are able to move independently) has the least impact on snakes. If erosion matting will be used for this project, use the following matting (or something similar): American Excelsior "FibreNet" or "NetFree" products; East Coast Erosion biodegradable jute products; Erosion Tech biodegradable jute products; ErosionControlBlanket.com biodegradable leno weave products; North American Green S75BN, S150BN, SC150BN or C125BN; or Western Excelsior "All Natural" products.

Confidential–Commercial Data

No actions are required or recommended for the following endangered resources:

• Bald Eagle (*Haliaeetus leucocephalus*) - Bird~

State Status: Federal Status:

Impact Type	No impact or no/low broad ITP/A
Reason	Lack of Suitable Habitat within Project Boundary
Justification	The Bald Eagle nest is not present at or adjacent to the project site. No impacts are anticipated.

• Red-shouldered Hawk (*Buteo lineatus*) - Bird~

State Status: THR

Impact Type	No impact or no/low broad ITP/A
Reason	Lack of Suitable Habitat within Project Boundary
Justification	No suitable habitat is present inside the project site and with the exiting disturbance at the site and distance to suitable habitat, it is unlikely that suitable nesting habitat will be disturbed. No impacts are anticipated. Red-shouldered Hawk (Buteo lineatus), listed as Threatened in Wisconsin, prefers larger stands of older-aged to mature bottomland hardwoods along riparian areas, deciduous swamps, and northern hardwoods or mixed deciduous-coniferous upland forests with wetland pockets or ephemeral ponds interspersed or located in proximity.

• Sand Prairie - Community

State Status: NA

Impact Type	No impact or no/low broad ITP/A
Reason	Lack of Suitable Habitat within Project Boundary
Justification	The designated Sand Prairie is not present at or adjacent to the project site. No impacts are anticipated.

• Floodplain Forest - Community~

State Status: NA

Impact Type	No impact or no/low broad ITP/A
Reason	Lack of Suitable Habitat within Project Boundary
Justification	The designated Floodplain Forest is not present at or adjacent to the project site. No impacts are anticipated.

• Riverine Lake/Pond - Community~

State Status: NA

Impact Type	No impact or no/low broad ITP/A
Reason	Lack of Suitable Habitat within Project Boundary
Justification	The designated Riverine Lake is not present at or adjacent to the project site. No impacts are anticipated.

• Redfin Shiner (*Lythrurus umbratilis*) - Fish~

State Status: THR

Impact Type	No impact or no/low broad ITP/A
Reason	Lack of Suitable Habitat within Project Boundary
Justification	No suitable habitat is present at or adjacent to the project site. No imapcts are anticipated. Redfin Shiner (Lythrurus umbratilis), listed as Threatened in Wisconsin, prefers turbid waters of pools in low-gradient streams over substrates of boulders, cobble, sand, silt, or detritus.

• Missouri Rock-cress (*Boechera missouriensis*) - Plant

State Status: SC

Impact Type	No impact or no/low broad ITP/A
Reason	Lack of Suitable Habitat within Project Boundary
Justification	It is unlikely that suitable habitat will be disturbed. No impacts are anticipated. Missouri Rock-cress (Boechera missouriensis), a Wisconsin Special Concern plant, is found in soil pockets on acidic cliffs, as well as in pine forests on sterile sand and gravel outwash plains.

Confidential–Commercial Data

• **Grassleaf Rush (*Juncus marginatus*) - Plant~**

State Status: SC

Impact Type	No impact or no/low broad ITP/A
Reason	Lack of Suitable Habitat within Project Boundary
Justification	it is unlikely that suitable habitat will be disturbed. No imapcts are anticipated. Grassleaf Rush (Juncus marginatus), a Wisconsin Special Concern plant, is found in acid peaty ditches and depressions in pine and oak barrens.

Section D. Next Steps

1. Evaluate whether the **'Location and brief description of the proposed project'** is still accurate. All recommendations in this ER Review are based on the information supplied in the ER Review Request. If the proposed project has changed or more than a year has passed and you would like your letter renewed, please contact the ER Review Program to determine if the information in this ER Review is still valid.
2. Determine whether the project can incorporate and implement the **'Follow-up actions'** identified above:
    - 'Actions that need to be taken to comply with state and/or federal endangered species laws' represent the Department's best available guidance for complying with state and federal endangered species laws based on the project information that you provided and the endangered resources information and data available to us. If the proposed project has not changed from the description that you provided us and you are able to implement all of the 'Actions that need to be taken to comply with state and/or federal endangered species laws', your project should comply with state and federal endangered species laws. Please remember that if a violation occurs, the person responsible for the taking is the liable party. Generally this is the landowner or project proponent. For questions or concerns about individual responsibilities related to Wisconsin's Endangered Species Law, please contact the ER Review Program.
    - If the project is unable to incorporate and implement one or more of the 'Actions that need to be taken to comply with state and/or federal endangered species laws' identified above, the project may potentially violate one or more of these laws. Please contact the ER Review Program immediately to assist in identifying potential options that may allow the project to proceed in compliance with state and federal endangered species laws.
    - 'Actions recommended to help conserve Wisconsin's Endangered Resources' may be required by another law, a policy of this or another Department, agency or program; or as part of another permitting, approval or granting process. Please make sure to carefully read all permits and approvals for the project to determine whether these or other measures may be required. Even if these actions are not required by another program or entity for the proposed project to proceed, the Department strongly encourages the implementation of these conservation measures on a voluntary basis to help prevent future listings and protect Wisconsin's biodiversity for future generations.
3. If federally-protected species or habitats are involved and the project involves federal funds, technical assistance or authorization (e.g., permit) and there are likely to be any impacts (positive or negative) to them, consultation with USFWS will need to occur prior to the project being able to proceed. If no federal funding, assistance or authorization is involved with the project and there are likely to be adverse impacts to the species, contact the USFWS Twin Cities Ecological Services Field Office at 612-725-3548 (x2201) for further information and guidance.

Section E. Standard Information to help you better understand this ER Review

Endangered Resources (ER) Reviews are conducted according to the protocols in the guidance document Conducting Proposed Endangered Resources Reviews: A Step-by-Step Guide for Wisconsin DNR Staff.

How endangered resources searches are conducted for the proposed project area: An endangered resources search is performed as part of all ER Reviews. A search consists of querying the Wisconsin Natural Heritage Inventory (NHI) database for endangered resources records for the proposed project area. The project area evaluated consists of both the specific project site and a buffer area surrounding the site. A 1 mile buffer is considered for terrestrial and wetland species, and a 2 mile buffer for aquatic species. Endangered resources records from the buffer area are considered because most lands and waters in the state, especially private lands, have not been surveyed. Considering records from the entire project area (also sometimes referred to as the search area) provides the best picture of species and communities that may be present on your specific site if suitable habitat for those species or communities is present.

Categories of endangered resources considered in ER Reviews and protections for each: Endangered resources records from the NHI database fall into one of the following categories:

- Federally-protected species include those federally listed as Endangered or Threatened and Designated Critical Habitats. Federally-protected animals are protected on all lands; federally-protected plants are protected only on federal lands and in the course of projects that include

federal funding (see Federal Endangered Species Act of 1973 as amended).

- Animals (vertebrate and invertebrate) listed as Endangered or Threatened in Wisconsin are protected by Wisconsin's Endangered Species Law on all lands and waters of the state (s. 29.604, Wis. Stats.).

- Plants listed as Endangered or Threatened in Wisconsin are protected by Wisconsin's Endangered Species Law on public lands and on land that the person does not own or lease, except in the course of forestry, agriculture, utility, or bulk sampling actions (s. 29.604, Wis. Stats.).

- Special Concern species, high-quality examples of natural communities (sometimes called High Conservation Value areas), and natural features (e.g., caves and animal aggregation sites) are also included in the NHI database. These endangered resources are not legally protected by state or federal endangered species laws. However, other laws, policies (e.g., related to Forest Certification), or granting/permitting processes may require or strongly encourage protection of these resources. The main purpose of the Special Concern classification is to focus attention on species about which some problem of abundance or distribution is suspected before they become endangered or threatened.

- State Natural Areas (SNAs) are also included in the NHI database. SNAs protect outstanding examples of Wisconsin's native landscape of natural communities, significant geological formations, and archeological sites. Endangered species are often found within SNAs. SNAs are protected by law from any use that is inconsistent with or injurious to their natural values (s. 23.28, Wis. Stats.).

Please remember the following:

1. This ER Review is provided as information to comply with state and federal endangered species laws. By following the protocols and methodologies described above, the best information currently available about endangered resources that may be present in the proposed project area has been provided. However, the NHI database is not all inclusive; systematic surveys of most public lands have not been conducted, and the majority of private lands have not been surveyed. As a result, NHI data for the project area may be incomplete. Occurrences of endangered resources are only in the NHI database if the site has been previously surveyed for that species or group during the appropriate season, and an observation was reported to and entered into the NHI database. As such, absence of a record in the NHI database for a specific area should not be used to infer that no endangered resources are present in that area. Similarly, the presence of one species does not imply that surveys have been conducted for other species. Evaluations of the possible presence of rare species on the project site should always be based on whether suitable habitat exists on site for that species.

2. This ER Review provides an assessment of endangered resources that may be impacted by the project and measures that can be taken to avoid negatively impacting those resources based on the information that has been provided to ER Review Program at this time. Incomplete information, changes in the project, or subsequent survey results may affect our assessment and indicate the need for additional or different measures to avoid impacts to endangered resources.

3. This ER Review does not exempt the project from actions that may be required by Department permits or approvals for the project. Information contained in this ER Review may be shared with individuals who need this information in order to carry out specific roles in the planning, permitting/approvals, and implementation of the proposed project.

Archaeological Reports Inventory
State Historic Preservation Office

Home | Search | Recent Reports

2 reports found where:
Township = 23
Range = 8
Direction = East
Section = 19
County = Portage

Refine Search

Year Published	Report Title	Authors	WHS #
1979	**Archaeological Survey, 1979, Municipal Wastewater treatment Facilities Survey, Plover, WI.**	Krajnak, Tom and Deborah Erdman	78-0738
1979	**Addendum To The Plover, Wisconsin Municipal Wastewater Treatment Facilities Archaeology Survey**	Krajnak, Tom and William Block	78-0738

2 reports found

WHPD. Copyright: All rights reserved. Division of Historic Preservation-Public History, Wisconsin Historical Society, 2011. Please remember to logout.

Primary Info	
WHS Project #	78-0738
ARI #	1043
Report Title	Archaeological Survey, 1979, Municipal Wastewater treatment Facilities Survey, Plover, WI.
Author	Krajnak, Tom and Deborah Erdman
Report Location	Missing as of 06/01/20

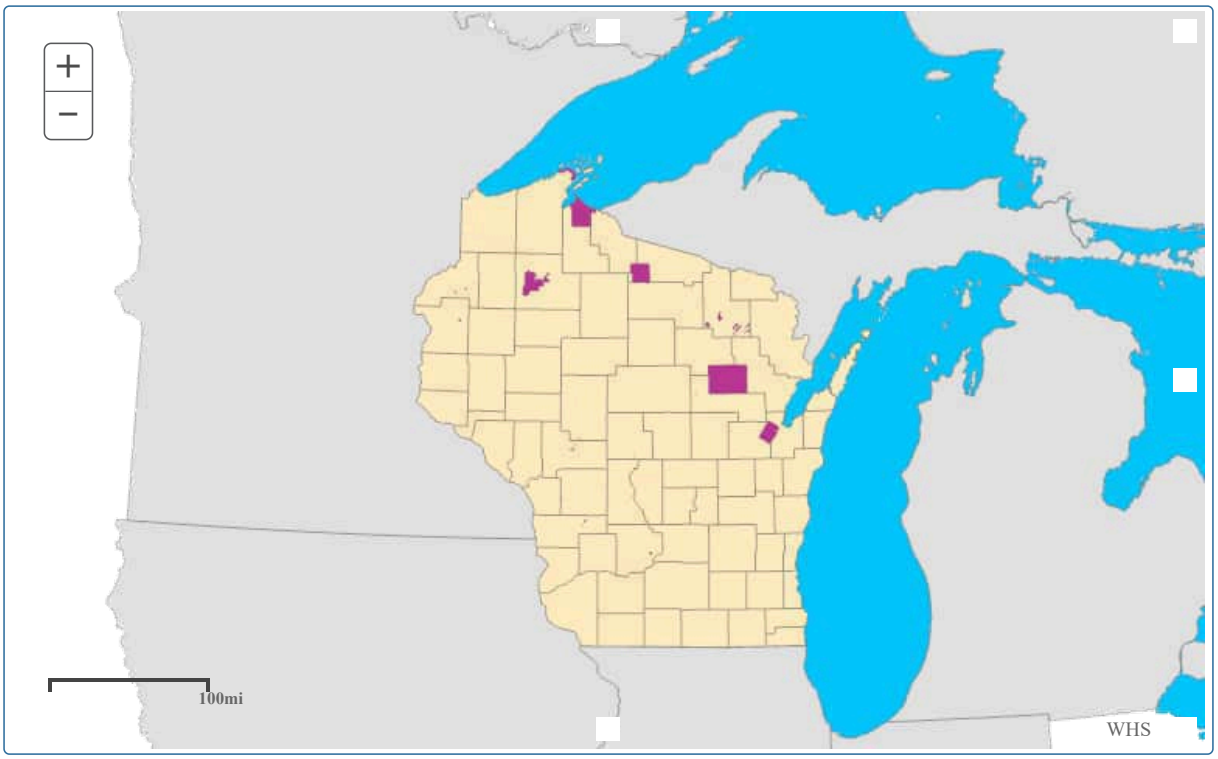
Location Info	
County	Portage
USGS 7.5' Quad Info	WHITING
PLSS	

Township	Range	Direction	Section	French Lot
23	8	E	19	

Investigation Info	
Investigation Type	Surface Survey

Reports	
Report Type	

Other Info	
Abstract	An archaeological survey was conducted for the expansion of the Plover Wisconsin Wastewater Municipal Treatment facilities. No archaeological material or features were noted. NO further work is recommended.
Series Type	
Series Number	
Series Investigator	University of Wisconsin-Stevens Point
Sites Investigated	
Map Description	
Acreage Covered	5.00
Place Published	Stevens Point, WI
Month Published	July
Year Published	1979
Is Report On File	Yes
Date Filed	08/08/1979
Date Entered	01/29/2014
Date Modified	06/02/2020


100mi
WHS

Primary Info	
WHS Project #	78-0738
ARI #	1044
Report Title	Addendum To The Plover, Wisconsin Municipal Wastewater Treatment Facilities Archaeology Survey
Author	Krajnak, Tom and William Block
Report Location	Archives - Box #56

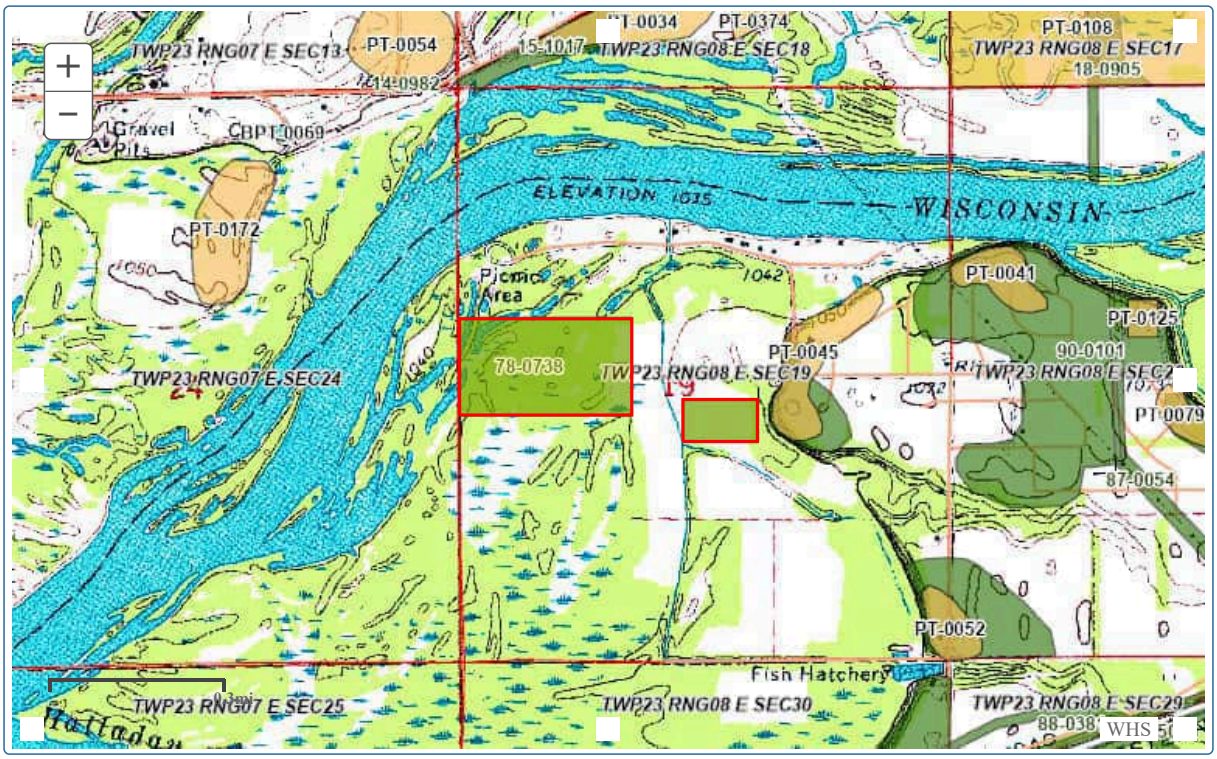
Location Info	
County	Portage
USGS 7.5' Quad Info	WHITING
PLSS	

Township	Range	Direction	Section	French Lot
23	8	E	19	

Investigation Info	
Investigation Type	Surface Survey

Reports	
Report Type	

Other Info	
Abstract	An additional archaeological survey was conducted for the expansion of the Plover Wisconsin Wastewater Municipal Treatment facilities. No archaeological material or features were noted. NO further work is recommended.
Series Type	
Series Number	
Series Investigator	University of Wisconsin-Stevens Point
Sites Investigated	
Map Description	
Acreage Covered	8.00
Place Published	Stevens Point, WI
Month Published	October
Year Published	1979
Is Report On File	Yes
Date Filed	10/01/1979
Date Entered	01/29/2014
Date Modified	07/14/2003


TWP23 RNG07 E SEC13
PT-0054
15-1017
TWP23 RNG08 E SEC18
PT-0374
PT-0108
TWP23 RNG08 E SEC17
18-0905
Gravel Pits
CBPT-0069
ELEVATION 1035
WISCONSIN
PT-0172
Picnic Area
PT-0041
PT-0125
78-0738
TWP23 RNG08 E SEC19
PT-0045
90-0101
TWP23 RNG08 E SEC2
TWP23 RNG07 E SEC24
PT-0079
87-0054
PT-0052
Fish Hatchery
TWP23 RNG07 E SEC25
TWP23 RNG08 E SEC30
TWP23 RNG08 E SEC29
88-038
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Wastewater System Memo

To: Steve Kunst, Gary Wolf, Utility Committee, Village Board
From: Lyle Lutz
Date: April 9, 2026
Subject: *Wastewater Facility and Collection Master Plan Reports*

Donohue is presenting the Wastewater Facility Plan Amendment and Collection System Master Plan reports. After working with Utility staff, collection of data, and site visits they have outlined the current state of facility operations and capacity. Both reports provide findings that give directions to areas that will need to be addressed in the future and projected costs for capital planning. Both reports are designed to be guidance tools and for the utility to focus on updates, upgrades, or additions to continue to meet the current and future needs of the community residential and industrial growth. The utility will continue to work to be fiscally responsible and develop planning strategies that align with the needs and capabilities of the Village staff and all that they serve and service.

Village staff and administration will continue working on strategies to move forward in any projects at the Wastewater Treatment Facility and on the collection system infrastructure.

If there are any questions that you have after the report presentations, you can feel free to reach out to me and would work to make time to discuss.

Both reports would look to get the recommendations for Village Board approval to be submitted to the DNR on the Village's behalf by Donohue & Associates, Inc. There is no obligation that the Village would be entering into for immediate projects. The DNR receives the reports to ensure that the Utility is taking the necessary reviews to ensure that the utility stays proactive in achieving compliance with current and future discharge permits.

VILLAGE OF PLOVER WISCONSIN

Village of Plover
2400 Post Road | Plover, WI 54467

Sanitary Collection System Master Plan

March 2026 – FINAL

DONOHUE

Prepared by:

Donohue & Associates, Inc.
3311 Weeden Creek Road |Sheboygan, WI 53081
donohue-associates.com

Donohue Project No.: 14598

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APPENDICES

Appendix A: Lift Station Assessment Report

Appendix B: Industrial Survey Responses

Appendix C: Detailed Capital Improvement Plan Cost Opinions

ABBREVIATIONS

ABS	Acrylonitrile Butadiene Styrene
cfs	Cubic Feet per Second
CIP	Capital Improvement Plan
DoA	Wisconsin Department of Administration
FOG	Fats, Oils, and Grease
fps	Feet per Second
GIS	Geographic Information System
gpcd	Gallons per Capita per Day
gpm	Gallons per Minute
I/I	Inflow and Infiltration
MGD	Million Gallons per Day
NASSCO	National Association of Sewer Service Companies
NCRPC	North Central Wisconsin Regional Planning Commission
O&M	Operation and Maintenance
PPH	People per Household
RPC	Regional Planning Commission
SSA	Sewer Service Area
Stevens Point 2040 SSA Plan	Stevens Point Urban Area Sewer Service Area Plan – 2040 Update
2025 SSA	Village of Plover 2025 Sewer Service Area
2045 SSA	Village of Plover 2045 Sewer Service Area
2065 SSA	Village of Plover 2065 Sewer Service Area
WDNR	Wisconsin Department of Natural Resources
WWTF	Wastewater Treatment Facility

1. INTRODUCTION

1.1 BACKGROUND

The Village of Plover (Village) is a growing community of approximately 14,000 persons located in Portage County, Wisconsin, approximately 3 miles south of Stevens Point and 100 miles north of Madison. The Plover Wastewater Utility was established in 1973 and provides sanitary collection and treatment services to residencies, businesses, institutions, and industries within the Village's sewer service area.

Sanitary collection system components include approximately 92 miles of gravity sewers, 10 lift stations, and approximately 2 miles of force mains, all of which vary in size, material, and age. Sanitary flows collected by the system are conveyed to the Village's wastewater treatment facility (WWTF) for treatment, discharge, and/or disposal.

The Village's location with respect to nearby major urban centers and principal transportation corridors creates significant potential for continued future population growth and development. Such continued population growth will necessitate complimentary and concurrent expansion of the Village's sanitary collection system.

Sanitary collection system expansion should not be performed in a vacuum on a development-by-development basis. Doing so would create several unnecessary risks, including:

- Installing new infrastructure that is adequately sized for a single development but inadequately sized for additional developments.
- Overwhelming existing infrastructure that is already near capacity.
- Installing lift stations in areas that could feasibly be served by gravity.
- Installing sewers at elevations that unnecessarily restrict gravity service areas.

Performing sanitary collection system expansion in accordance with a long-range master plan will mitigate these risks. Master plans provide sanitary collection system owners with technical data and planning recommendations that allow for orderly expansion of a system's facilities over a defined (typically 20-year) planning period. Master plans also provide a basis for future approvals or denials of requests for sewer service to land developers, local government units, Regional Planning Commissions (RPC), and the Wisconsin Department of Natural Resources (WDNR).

1.2 PURPOSE AND SCOPE

This report summarizes the results of a Sanitary Collection System Master Plan study for the Village of Plover and will serve as a comprehensive plan to guide future capital improvements and expansion of the sanitary collection system. This study focused on the following primary objectives:

1. Analyze existing sanitary collection system conditions (Chapter 2), capacities (Chapter 3), and peak flows (Chapter 4).
2. Establish planning level 2045 and 2065 development boundaries and land uses (Chapter 5).
3. Estimate 2045 and 2065 sanitary peak flows (Chapter 5).
4. Create 2045 and 2065 sanitary collection system expansion plans to accommodate the estimated peak flows (Chapter 5).
5. Identify sanitary collection system deficiencies and recommend improvements. Develop a Capital Improvement Plan (CIP) to implement these recommendations. (Chapter 6).

Comprehensive planning is a continuous function. Donohue recommends the Village review and consider updating the Collection System Master Plan at least every five to seven years, or whenever significant shifts in development, population, or service area boundaries occur. Updates may include revising plan sections, adding amendments, or confirming that no changes are required.

2. SUMMARY OF EXISTING SANITARY COLLECTION SYSTEM

2.1 EXISTING COLLECTION SYSTEM

The Village's existing sanitary collection system serves an approximately 4,976-acre area as of 2025. This 2025 Sewer Service Area (2025 SSA) is comprised of land from both the Village of Plover (4,887 acres) and the Town of Plover (89 acres). Existing sanitary collection system infrastructure includes force mains, lift stations, and gravity sewers.

Gravity sewers that meet either of the following criteria are classified as critical gravity sewers:

- The gravity sewer will convey flow from future developments.
- The gravity sewer serves as the discharge point for a lift station.

Exhibit 1 displays the 2025 SSA boundary along with the existing collection system's force mains, lift stations, and critical gravity sewers.

VILLAGE OF PLOVER WISCONSIN

DONOHUE

N

Feet
0 1,500

LEGEND

- Existing Lift Station

Existing Critical Gravity Sewers

- 8-inch
- 10-inch
- 12-inch
- 15-inch
- 18-inch
- 21-inch
- 24-inch
- 27-inch
- 30-inch
- 33-inch
- 36-inch
- Existing Sanitary Force Main
- 2025 Sewer Service Area Boundary
- Parcels
- 2025 Airline Dr. Lift Station Sewer Service Area
- 2025 First St. Lift Station Sewer Service Area
- 2025 Springville Pond Lift Station Sewer Service Area
- 2025 Roosevelt Dr. Lift Station Sewer Service Area
- 2025 River Dr. Lift Station Sewer Service Area
- 2025 Patti Dr. Lift Station Sewer Service Area
- 2025 Okray Ave. Lift Station Sewer Service Area
- 2025 Mirage Circle Lift Station Sewer Service Area
- 2025 Industrial Park Lift Station Sewer Service Area
- 2025 Hoover Ave. Lift Station Sewer Service Area
- Open Water

LMS
I 39
HOOVER AVE. LS
HVS
FIRST ST. LS
PRS
BPS
NRS
PORTER RD
SPS
ADS
FRS
AIRLINE DR. LS
OKRAY AVE. LS
SPRINGVILLE DR. LS
WWTF-NS-1
WISCONSIN RIVER
RIVER DR. LS
VILLAGE OF PLOVER
WASTEWATER TREATMENT FACILITY
OKS
RSS
ROOSEVELT DR. LS
MIRAGE CIR. LS
MCS
RVS
WWTF-NS-2
INDUSTRIAL PARK LS
WWTF-NS-3
WWTF-MS-1
PLOVER RD
WWTF-MS-2
WWTF-NS-4
EMS
IPS
SRS
PATTI DR. LS
PDS
CLS
WWTF-SS
AWS
PLS
STH 54
I 39
STH 54

EXHIBIT 1 - VILLAGE OF PLOVER 2025 SSA AND EXISTING FORCE MAINS, LIFT STATIONS, AND CRITICAL GRAVITY SEWERS

2.1.1 GRAVITY SEWERS

Information on the existing gravity sewers was gathered from the Village's geographic information system (GIS). Installation dates were not included in the GIS information. According to record drawings, the oldest sewers were installed in the early 1970s, coinciding with the construction of the original WWTF.

There are 5,034 sanitary laterals recorded in the GIS. Of these 5,034 sanitary laterals:

- 4,595 laterals are 4-inch diameter.
- 381 laterals are 6-inch diameter.
- 12 are 8-inch diameter.
- 46 laterals do not have a recorded size.

A summary of the existing gravity sewers within the 2025 SSA is displayed in Table 2-1.

Table 2-1: Summary of Existing Gravity Sewers

Diameter (in)	Material	Length (Ft)
4	PVC	723
6	PVC	542
8	PVC	231,817
	ABS	139,701
	Ductile Iron	416
10	PVC	14,507
	ABS	5,593
12	PVC	9,060
	ABS	10,173
15	PVC	2,155
	ABS	10,173
	Concrete	609
18	PVC	3,920
	ABS	2,196
	Concrete	5,058
21	PVC	9,440
	ABS	279
24	Concrete	2,067
27	PVC	739
	Concrete	2,900
30	PVC	7,021
	Concrete	4,903
33	Concrete	5,199
36	PVC	44
	Concrete	16,574
Total Existing Gravity Sewer and Interceptor Length		485,809 Ft (92 miles)

2.1.2 FORCE MAINS

Information on the existing force mains was summarized from GIS data and a document provided by the Village titled *Sanitary Sewer Lift Station Information*. See Table 2-2.

Table 2-2: Summary of Existing Force Mains

Force Main	Diameter (in)	Material	Length (ft)	Construction Year
Hoover Avenue Lift Station	6	Ductile Iron	904	1979
Airline Drive Lift Station	4	PVC (C-900)	1,048	1989
First Street Lift Station	6	Unknown	1,290	1978
Industrial Park Lift Station	8	Ductile Iron	1,082	1988
Okray Avenue Lift Station	8	Ductile Iron	2,272	1978
Patti Drive Lift Station	6	Unknown	625	1979
River Drive Lift Station	6	Ductile Iron	1,472	1973
Roosevelt Drive Lift Station	4	Ductile Iron	1,218	1973
Springville Drive Lift Station	8	Ductile Iron	560	1978
Mirage Circle Lift Station	4	Unknown	887	1995
Total Existing Force Main Length			11,358 Ft (2.2 miles)	

2.1.3 LIFT STATIONS

A summary of the existing Lift Stations is displayed in Table 2-3. Information in the table was gathered from record drawings, GIS data, and lift station design documents provided by the Village.

Table 2-3: Summary of Existing Lift Stations

Name/Location	Year	Type	Pump Manufacturer (number)	HP	Pump Capacity (gpm)	Design Head (ft)	Voltage
Hoover Avenue	1979	Submersible	Flygt (2)	5	260	34	24
Airline Drive	1979	Submersible	Flygt (2)	2.5	200	24	240
First Street	1979	Submersible	ABS/Sulzer (2)	3	200	24	240
ID Park	1990	Submersible	Flygt (2)	5	400	29	480
Okray	1979	Submersible	Flygt (2)	7.5	460	31	480
Patti Drive	1977	Submersible	Flygt (2)	3.2	270	19	240
River Drive	1973	Dry well / Wet well	Fairbanks Morse (2)	5	250	22	240
Roosevelt Drive	1973	Submersible	Flygt (2)	3	150	47	240
Springville Drive	1978	Wet well submersible with above grade generator building	Flygt (2)	5	380	18	240
Mirage Circle	1995	Submersible	Flygt (2)	3.2	300	Unknown	480

2.2 CONDITION ASSESSMENT

2.2.1 GRAVITY SEWERS

Village staff did not express any specific concerns regarding the structural condition of the existing gravity sewers. Furthermore, GIS records show only eight “sanitary system repairs,” all of which pertain to operation and maintenance (O&M) rather than structural deficiencies. Given the lock of recorded structural repairs and the relatively young age of the collection system, the existing gravity sewers are assumed to be in at least fair condition.

It is typically assumed that buried gravity sewer pipes have 75-year service lives. The oldest gravity sewers in the Village's system are about 50 years old. It's recommended the Village implement an inspection program for gravity sewers to assess condition. See Chapter 6 for further discussion and recommendations.

2.2.2 FORCE MAINS

Village staff did not express any condition-related concerns for nine of the ten existing sanitary force mains, with the exception being Okray Avenue Lift Station force main.

The Okray Avenue force main has noted issues with build-up of fats, oils, and grease (FOG) within the force main pipe. Documentation provided by Village detailing force main pigging operations that took place in 2016 and 2017 suggested that the effective inner diameter of the force main was 5.7-inches at the time. The pigging operations did not appear to result in flow rate improvements.

The FOG build-up is likely caused by inadequate flow velocity. Typical flows in the force main reach approximately 2 feet per second (fps) for the 8-inch nominal pipe diameter. This velocity was calculated by dividing the measured lift station capacity of 311 gallons per minute (gpm) by the pipe's cross-sectional area. While 2 fps is generally the minimum required for self-cleaning, the specific composition of the wastewater at this lift station may necessitate higher velocities to prevent accumulation.

The concerns regarding the Okray Avenue force main are fundamentally related to O&M rather than structural deficiencies. Furthermore, with no recorded force main repairs in the GIS system, It is assumed that the existing force mains are in adequate condition and do not require immediate structural improvements.

Ferrous force main pipes are typically assumed to have 50-year service lives. As the oldest ferrous force mains in the Village's system are approximately 52 years old, rehabilitation or replacement may soon be necessary. See Chapter 6 for further discussion and recommendations.

2.2.3 LIFT STATIONS

The Village requested that detailed condition assessments be performed at the following lift stations:

- Okray Avenue
- River Drive
- Industrial Park
- Springville Drive
- Hoover Avenue
- Airline Drive

The recommended improvements at each lift station are listed in Table 2-4 through Table 2-9. See *Appendix A – Lift Station Assessment Report* for complete documentation of the condition assessments.

Condition assessments were not requested at the Mirage Circle, Patti Drive, Roosevelt Drive, and First Street Lift Stations.

Table 2-4: Recommended Improvements at Okray Avenue Lift Station

Improvement Number	Description
1	Replace Pump 1.
2	Confirm the age of the UPS battery and replace it if it is more than five years old.
3	Replace UPS load side cable.
4	Install intrinsically safe relay for level transducer.
5	Confirm whether the conduits originating in the wet well have seal-offs prior to splice box as required by code.
6	Install safety grating for hatch openings.

Table 2-5: Recommended Improvements at River Drive Lift Station

Improvement Number	Description
1	Consider converting lift station to a wet well submersible configuration. a. Partially demolish the existing dry well structure. b. Install new valve vault manhole. c. Modify existing wet well to accommodate submersible pumps. d. Install two new submersible pumps. e. Replace all pump discharge piping and associated valves. f. Consider upgrading to 480 volt 3-phase power.
2	Alternatively, consider complete replacement of existing lift station with a submersible station. a. Construct entirely new submersible lift station wet well & dry well. b. Install all new controls and equipment. c. Install new discharge piping and tap into existing force main. d. Consider upgrading to 480 volt 3-phase power.
3	Consider upgrading to 480 volt 3-phase power if major renovations are planned/expected.
4	If Improvement 2 is not constructed, confirm the age of the UPS battery and replace it if it is more than five years old.
5	If Improvement 2 is not constructed, remove caged ladder and replace with fall arrest system.
6	If Improvement 2 is not constructed, replace wet well air intake blower.
7	If Improvement 2 is not constructed, replace dry well exhaust blower and dehumidifier.

Table 2-6: Recommended Improvements at Industrial Park Lift Station

Improvement Number	Description
1	Replace existing pumps.
2	Replace existing piping plug valves & check valves.
3	Install a cross tee in place of the existing Y fitting that connects each pump discharge to the force main, followed by a plug valve.
4	Install a sump with a 2-inch drain line.
5	Confirm the age of the UPS battery and replace it if it is more than five years old.
6	Install intrinsically safe barriers for wet well instrumentation.
7	Confirm whether the conduits originating in the wet well have seal-offs prior to splice box as required by code.
8	Move wet well vent pipe exhaust a minimum of 5 feet away from control panel.
9	Install safety grating for hatch openings.

Table 2-7: Recommended Improvements at Springville Drive Lift Station

Improvement Number	Description
1	Replace generator building roof.
2	Replace generator building exterior wall covering.
3	Consider upgrading to 480 volt 3-phase power if major renovations are planned/expected.
4	Confirm the age of the UPS battery and replace it if it is more than five years old.
5	Reinstall intrinsically safe relay for wet well instrumentation per code.
6	Install safety grating for hatch openings.
7	Install a dedicated exhaust fan for additional cooling for after generator usage.

Table 2-8: Recommended Improvements at Hoover Avenue Lift Station

Improvement Number	Description
1	Consider upgrading to 480 volt 3-phase power if major renovations are planned/expected.
2	Reinstall intrinsically safe relay for wet well instrumentation per code.
3	Confirm the age of the UPS battery and replace it if it is more than five years old.
4	Confirm whether the conduits originating in the wet well have seal-offs prior to splice box as required by code.
5	Install safety grating for hatch openings.

Table 2-9: Recommended Improvements at Airline Drive Lift Station

Improvement Number	Description
1	Replace existing pumps.
2	Replace existing valves.
3	Consider installing 6'-0" precast concrete manhole to serve as a dedicated valve vault. a. Install new pumps, valves, and discharge piping with a bypass pumping connection. b. Consider upgrading to 480 volt 3-phase power.
4	Consider upgrading to 480 volt 3-phase power if major renovations are planned/expected.
5	Confirm the age of the UPS battery and replace it if it is more than five years old.
6	Install intrinsically safe barriers for wet well instrumentation per code.
7	Install safety grating for hatch openings.

3. EXISTING SANITARY COLLECTION SYSTEM CAPACITY

3.1 EXISTING CRITICAL GRAVITY SEWER CAPACITIES

The capacities of the existing critical gravity sewers were calculated using Manning's Equation and are displayed in Table 3-1.

Table 3-1: Existing Critical Gravity Sewer Capacities

2025 Critical Gravity Sewer ID	Sewer Name	Size (inch)	Material	Slope (ft/ft)	Streets	Upstream MH	Downstream MH	Capacity (cfs) (n = 0.013)	Comments
LMS	Lombard Dr. & Hoover Ave.	8	PVC	0.00400	Lombard Dr. from Hoover Ave. to just east of I-39	E072	E036	0.78	To Hoover Ave. LS.
		10	PVC	0.00280	Hoover Ave. from Plum St. to Lombard Dr.	E036	E017	1.15	
		10	ABS	0.00280	Crosses Hoover Ave. at Plum St.	E017	Hoover Ave. LS	1.15	
HVS	Hoover Ave. Lift Station Discharge	8	ABS	0.00400	Tanglewood Dr. from Porter Rd. to Juniper Ln. and Kubacki Park and Coventry Dr. from Kubacki Park to just south of Elm St.	C156	C134	0.78	From Hoover Ave. LS to Springville Dr. Lift Station Sewer.
ADS	Airline Dr. Lift Station Discharge	8	PVC	0.00400	Holly Ln. from Porter Rd. to Airline Rd. and Airline Rd.	C178	C172	0.78	From Airline Dr. LS to Porter Rd. Sewer.
		8	ABS	0.00400	Greentree Dr. from Porter Rd. to Holly Ln.	C172	C167	0.78	
FRS	First St. Lift Station Discharge	8	ABS	0.00400	Post Rd. from MacArthur Way to Tommys Tpke.	B081	B053	0.78	From First St. LS to Okray Ave. LS.
		10	ABS	0.00280	Post Rd. from Roberts Rd. to MacArthur Way	B053	B046	1.15	
		12	ABS	0.00220	Okray Ave. and Easement from Okray LS to Post Rd. Post Rd. from Easement to Roberts Rd.	B046	Okray Ave. LS	1.67	
OKS	Okray Ave. Lift Station Discharge	12	ABS	0.00220	Post Rd. from Roosevelt Dr. to north of Bea Jay Ln.	D517	D412	1.67	From Okray Ave. LS to North Branch WWTF Sewer.
		12	ABS	0.00280	Roosevelt Dr. from Washington Ave. to Post Rd.	D412	D238	1.89	
RSS	Roosevelt Dr. Lift Station Discharge	8	ABS	0.00300	Roosevelt Dr. from Washington Ave. to Hoover Ave.	D279	D238	0.67	From Roosevelt Dr. LS to North Branch WWTF Sewer.
MCS	Mirage Circle Lift Station Discharge	8	PVC	0.00400	Key Ln. from Mirage Cir. To River Dr.	4-67	4-65	0.78	From Mirage Cir. LS to River Dr. LS.
		8	PVC	0.00280	River Dr. from Key Ln. to MH 4-34	4-65	4-34	0.65	
		8	ABS	0.00300	River Dr. from MH 4-34 to MH 4-22	4-34	4-22	0.67	
		8	DI	0.00300	River Dr. from MH 4-22 to Okray Ave.	4-22	4-01	0.67	
		10	ABS	0.00400	Okray Ave. from River Dr. to River LS	River Dr. LS	4-01	1.37	
RVS	River Dr. Lift Station Discharge	10	ABS	0.00280	Pine Dr. from Post Rd. to Washington Ave.	D401	D235	1.15	From River Dr. LS to North Branch WWTF Sewer.
IPS	Industrial Park Lift Station Discharge	10	PVC	0.00280	Twin Towers Dr. from Moore Rd. to Plover Rd. Plover Rd. from Twin Towers Dr. to MH D465	D469	D464	1.15	From Industrial Park LS to South CTH R Sewer.
		10	ABS	0.00300	Plover Rd. from MH D465 to CTH R	D464	D730	1.19	
PDS	Patti Dr. Lift Station Discharge	8	PVC	0.00400	Patti Dr. from Evergreen Dr. to Jackson Ave.	D033	D031	0.78	From Patti Dr. LS to WWTF Main Interceptor.
		8	ABS	0.00300	Jackson Ave. from Patti Dr. to Maple Dr.	D031	D028	0.67	
BPS	Bentley Park Dr.	8	PVC	0.00300	Bentley Park Dr. from Porter Rd. to MH C250	C250	C241	0.67	Will service future development north of Porter Rd. and west of CTH R.
CLS	Cleveland Ave.	8	PVC	0.03000	Cleveland Ave. from MH D853 to Royal Oak Dr.	D853	D090	0.67	Will service future development southeast of Cleveland Ave.
		8	ABS	0.04000	Cleveland Ave. from Royal Oak Dr. to Maple Dr.	D090	D087	0.78	
EMS	East Maple Dr.	27	PVC	0.00067	Maple Dr. from Post Road to MH stub east of MH D498A	D498A	D145	8.02	Will service future development southeast of Maple Dr. and Post Rd. intersection.
NRS	North CTH R	18	PVC	0.00120	Easement east side of Koble Apartments	C255	C252	3.64	Will service future development east of CTH R.
		24	PVC	0.00080	South of Koble Apartments and CTH R from Koble Apartments to MH C245A	C252	C245A	6.40	
		24	Concrete	0.00080	CTH R from MH C245A to Porter Dr.	C245A	C243	6.40	
PRS	Porter Rd.	36	Concrete	0.00046	Porter Rd. from CTH R to I-39 Crossing	C246	C235	14.31	Will service future development east of I-39 and north of Little Plover River.
		36	Concrete	0.00250	Porter Rd. from I-39 Crossing to Bel Aire Dr.	C235	C168	33.35	
SPS	Springville Dr. Lift Station	15	Concrete	0.00150	Porter Rd. from Bel Aire Dr. to Hoover Ave.	C168	C168A	2.50	Will service future development from Hoover Ave. LS.
		15	ABS	0.00150	Porter Rd. from Hoover Ave. to Seventh St. Seventh St. from Porter Rd. to Rainbow Dr. Rainbow Dr. from Seventh St. to Easement near Ashwood Dr.	C168A	C002	2.50	
		18	PVC	0.00210	Under Springville Pond	C002	C001	4.81	
		18	DI	0.00210	Under Springville Pond	C001	Springville Dr. LS	4.81	
WWTF-NS-1	North Branch WWTF Segment 1	18	Concrete	0.00210	Springville Dr. from Heatherton Ln. to Plover Springs Dr.	D288	D245	4.81	Will service future development in Springville Dr. LS service area.
		18	Concrete	0.00120	Plover Springs Dr. from Springville Dr. to Washington Ave. Washington Ave. from Plover Springs Dr. to Roosevelt Dr.	D245	D238	3.64	
WWTF-NS-2	North Branch WWTF Segment 2	24	Concrete	0.00080	Washington Ave. from Roosevelt Dr. to Pine Dr.	D238	D235	6.40	
WWTF-NS-3	North Branch WWTF Segment 3	27	Concrete	0.00067	Washington Ave. from Pine Dr. to Vineyard Dr.	D235	D195	8.02	
WWTF-NS-4	North Branch WWTF Segment 4	30	Concrete	0.00070	Vineyard Dr. from Washington Ave. to Post Rd. Post Rd. from Vineyard Dr. to Maple Dr.	D195	D145	10.85	
SRS	South CTH R	21	PVC	0.00100	CTH R from Plover Rd. to Pleasant Dr.	D730	D717	5.01	Will service future development in southeast.
AWS	Arbor Hvn Way	21	PVC	0.00100	Arbor Hvn Way from Amberwood Way to Pleasant Dr.	D860	D780	5.01	Will service future development in area east of Arbor Hvn Way
PLS	Pleasant Dr.	21	PVC	0.00100	Pleasant Dr. from Arbor Hvn Way to CTH R	D780	D717	5.01	Will service future development in southeast.
		30	Concrete	0.00058	Pleasant Dr. from CTH R to I-39	D717	D710	9.88	
		30	PVC	0.00090	Pleasant Dr. from I-39 to Post Rd.	D710	D486	12.31	
WWTF-SS	South Branch WWTF	30	PVC	0.00080	Post Rd. from Hoover Ave. to Lincoln Ave.	D488	D156	11.60	Will service future development in southeast.
		15	ABS	0.00150	Johnson Ave. from Lincoln Ave. to Maple Dr.	D156	D145	2.50	
WWTF-MS-1	WWTF Main Interceptor Segment 1	33	Concrete	0.00060	Maple Dr. from Post Rd. to Jackson Ave.	D145	D027A	12.96	Will service all future developments.
WWTF-MS-2	WWTF Main Interceptor Segment 2	36	Concrete	0.00046	Maple Dr & WWTF Interceptor Easement	D027A	D001	14.31	

3.2 EXISTING LIFT STATION CAPACITIES

The capacity of a lift station is based on the concept of "firm capacity," which is defined as the station's capacity when its largest pump is out of service. Since each of the Village's existing lift stations contains two identical pumps, their firm capacities are equal to their maximum flow rates with a single pump in operation. The firm capacities of the existing lift stations are summarized in Table 3-2.

Table 3-2: Existing Lift Station Firm Capacities

Lift Station	Firm Capacity (gpm / cfs)
Hoover Avenue	265 / 0.59
Airline Drive	190 / 0.42
First Street	195 / 0.43
Industrial Park	460 / 1.02
Okray Avenue	311 / 0.69
Patti Drive	445 / 0.99
River Drive	220 / 0.49
Roosevelt Drive	150 / 0.33
Springville Drive	265 / 0.59
Mirage Circle	155 / 0.35

Single pump capacities for all lift station other than Okray Avenue were provided by the Village in a spreadsheet titled *Lift Station Pumping Rate Calc Sheets*. Okray Avenue's single pump capacity was calculated during a field test performed as part of this Master Plan.

3.2.1 OKRAY AVENUE LIFT STATION DRAWDOWN TESTING

Pump draw down tests were completed for the Okray Avenue Lift Station on June 23, 2025, to better understand how the station's capacity has been impacted by the known FOG issues. The length of time to drawdown the wet well was recorded in two different scenarios: 1 pump running and 2 pumps running. The lift station firm capacity was calculated to be 311 gallons per minute (gpm) and total capacity to be 416 gpm using the pump run times, drawdown depth, and wet well dimensions.

The measured flow value and pressure recorded during testing was plotted against the system curve and pump curve for Flygt pump C-3127. The system curve assumes the force main has a "C" value of 100. Per design documentation, the pump has a design flow rate of 420 gpm. See Figure 3-1. The pump station and force main are not performing at design capacity as indicated by the duty fit point and as-measured duty points not matching closer to the intersection of the pump and system head curve. Two possible reasons for are: (1) the pumps are worn out, and (2), there is a restriction in the force main due to continued FOG build-up.

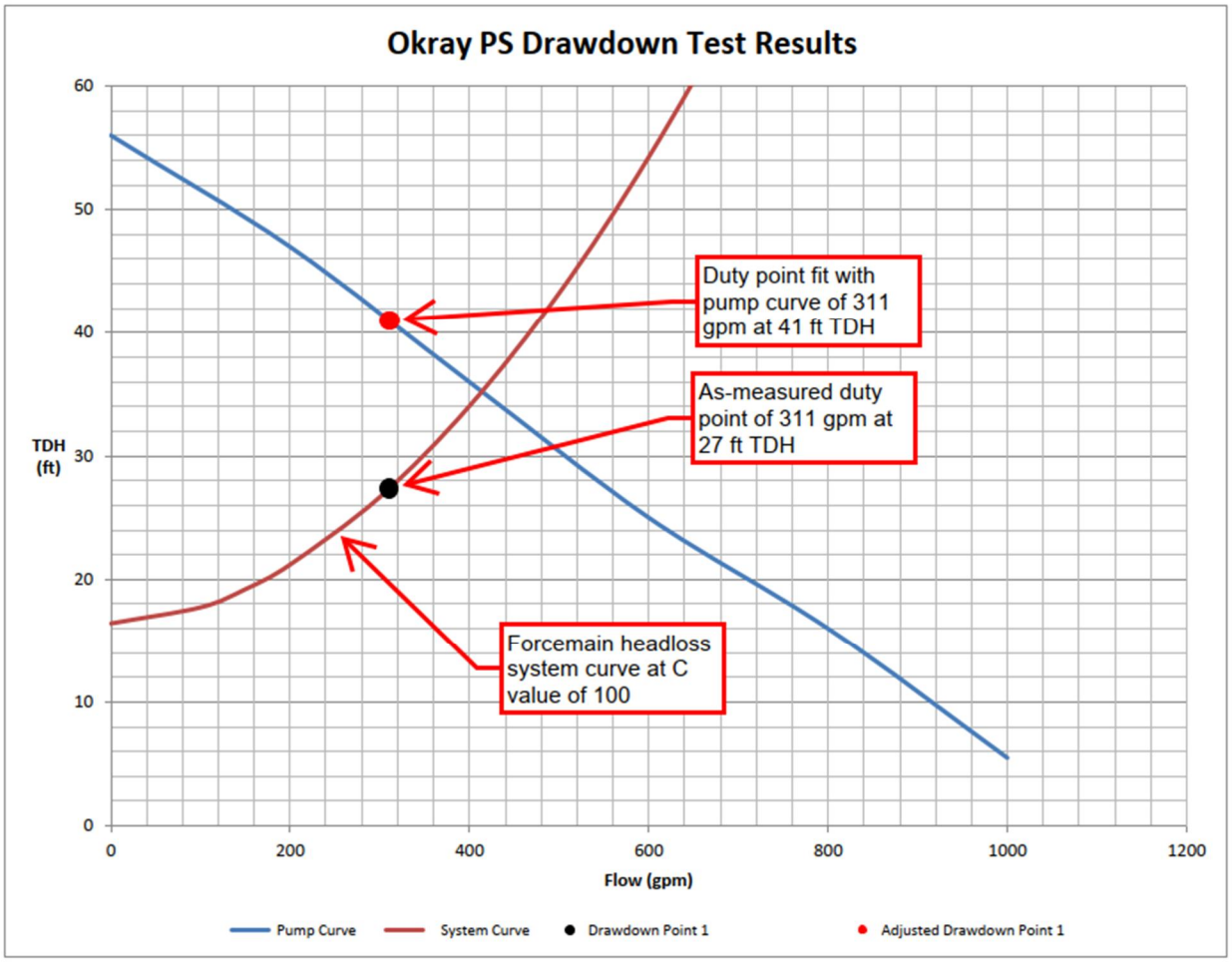


Figure 3-1: Okray Lift Station drawdown test results.

4. EXISTING SANITARY COLLECTION SYSTEM PEAK FLOWS

Existing flows in the collection system need to be estimated or measured to determine how much capacity is available to support future developments.

One method for estimating existing flows involves multiplying land use areas (e.g., residential, commercial, and industrial) by peaked unit flow rates per acre. Alternatively, existing flows can be measured directly from the collection system. The Village provided daily pump runtime data for each lift station and hourly flow meter data from the WWTF for the period between 2020 and 2024; no additional flow monitoring was performed as part of this Master Plan.

Existing flows were estimated using a hybrid approach, where WWTF flow meter data was utilized to calculate existing peaked unit flow rates per acre for the various land uses within the 2025 SSA.

4.1 EXISTING LAND USE

Existing land use GIS data for the Village of Plover and Town of Plover was provided by Portage County. Donohue performed a GIS analysis on the data to determine the amounts and types of land use within the 2025 SSA and within the service areas for each lift station. The analysis results are summarized in Table 4-1 and displayed on Exhibit 2. The summation of the individual lift station land use areas does not equate to the overall 2025 SSA land use area because large swaths of the 2025 SSA do not drain to a lift station.

Table 4-1: Existing Land Use Areas

Service Area	Type of Land Use (acres)					
	Single-Family Residential	Two-Family Residential	Multi-Family Residential	Commercial	Institutional / Governmental	Industrial
2025 SSA	1918	126	275	418	176[1]	433[2]
Hoover Ave. LS[3]	66	27	57	92	16	0
Airline Dr. LS[3]	52	23	0	0	8	6
First St. LS[4]	64	4	0	4	0	0
Industrial Park LS	32	0	0	0	20[1]	2
Okray Ave. LS[4]	78	10	33	59	2	22[2]
Patti Dr. LS	23	1	34	0	0	0
River Dr. LS[5]	112	9	5	6	14	55
Roosevelt Dr. LS	113	0	0	0	0	0
Springville Dr. LS[3]	409	0	10	0	26	4
Mirage Cir. LS[5]	19	0	19	0	21	3

Notes:

[1] 176 institutional acres include the following areas with unique, water-intensive, contributing rates:

- 7 acres for Water Way Plant (located within the Industrial Park LS service area)
- 10 acres for Pleasant Drive Plant

[2] 433 industrial acres include the following areas with unique, water-intensive, contributing rates:

- 12 acres for Monogram Moore Rd. Plant
- 6 acres for Monogram Post Rd. Plant (located within the Okray Ave. LS service area)
- 58 acres for Del Monte Plant
- 1 acre for Oso Facility
- 10 acres for Ingredion Plant
- 26 acres for McCain Infinity Plant

[3] Areas shown for Springville Dr. LS drain directly to Springville Dr. LS. Note that Hoover Ave. LS and Airline Dr. LS discharge to Springville Dr. LS. Therefore, the total Springville Dr. LS service area also includes the Hoover Ave. LS and Airline Dr. LS areas.

[4] Areas shown for Okray Ave. LS drain directly to Okray Ave. LS. Note that First St. LS also discharges to Okray Ave. LS. Therefore, the total Okray Ave. LS service area also includes the First St. LS areas.

[5] Areas show for River Dr. LS drain directly to River Dr. LS. Note that Mirage Cir. LS also discharges to River Dr. LS. Therefore, the total River Dr. LS service area also includes the Mirage Cir. LS areas.

The contributing rates for the water intensive facilities noted in Table 4-1 are discussed in Section 4.2.

VILLAGE OF PLOVER WISCONSIN

DONOHUE

WISCONSIN RIVER

STH 54

I 39

PORTER RD

PLOVER RD

STH 54

I 39

N

Feet
0 1,500

LEGEND

- 2025 Sewer Service Area Boundary
- Municipal Boundary
- Parcels
- Open Water

Existing Land Use

- Single Family
- Duplex
- Multi-Family (3+ Units)
- Mobile Home Park
- Commercial
- Institutional / Governmental
- Industry
- Agriculture
- Park
- Not Developable
- Vacant
- Railroad
- Road Right-of-Way

NOTE:

LAND USE GIS DATA FROM PORTAGE COUNTY

EXHIBIT 2 - VILLAGE OF PLOVER 2025 SSA AND EXISTING LAND USE

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

4.2 EXISTING LAND USE CONTRIBUTING RATES

The following assumptions were used to establish the mathematical relationships between the contributing rates of the various land uses:

- The two-family residential rate is double the single-family residential rate.
- The multi-family residential rate is 3.5 times the single-family residential rate.
- The commercial and institutional/governmental rates are 1.89 times the single-family residential rate.
- The industrial rate is 0.00048 cfs/acre.

These assumptions are based on the mathematical relationships between the contributing rates for new development, as shown in Chapter 6. The existing industrial contributing rate was assumed to match the non-peaked rate for new development, as it is consistent with industrial rates used in other communities. In contrast, the rates for other land uses exhibited more variability.

The average low flows for each month at the WWTF from 2020 through 2024 were examined. The highest of these values – 1.43 million gallons per day (MGD) or 2.22 cubic feet per second (cfs) in April 2024 – was selected to calculate the existing land use contributing rates shown in Table 4-2. This flow was chosen under the assumption that it best represents the maximum baseflow within the collection system.

The 2025 SSA land use areas presented in Table 4-1 were multiplied by the contributing rate assumptions and set equal to the maximum WWTF baseflow of 2.22 cfs. From this, the existing contributing rates were computed. Finally, a peaking factor of 4.0 was applied to the contributing rates in accordance with Wisconsin Department of Natural Resources (WDNR) Administrative Code NR 110.13(1)(c) for submain and branch sewers.

Table 4-2: Existing Land Use Contributing Rates

Land Use Type	Contributing Rate (4.0 Factor, cfs/acre)
Single-Family Residential	0.0019
Two-Family Residential	0.0038
Multi-Family Residential	0.0067
Commercial	0.0036
Institutional/Governmental	0.0036
Industrial	0.0019

Contributing rates for water-intensive facilities are shown in Table 4-3. The Village provided the peak contributing rates for Water Way and Pleasant Drive Plants. The peak contributing rates for the remaining plants and facilities were calculated using information provided by the plant/facility owners through industrial surveys that were distributed by the Village. See *Appendix B – Industrial Survey Responses* for the completed survey forms.

Table 4-3: Water-Intensive Facility Contributing Rates

Unique Area	Existing Peak Contributing Rate (cfs/acre)
Water Way Plant	0.0257
Pleasant Drive Plant	0.0189
Monogram Moore Rd. Plant	0.0150
Monogram Post Rd. Plant	0.0400
Del Monte Plant	0.0100
Oso Facility	0.0130
Ingredion Plant	0.0210
McCain Infinity Plant	0.0140

4.3 LIFT STATION PEAK DAY FLOWS

The longest pump runtimes at each lift station were determined by analyzing the 2020-2024 daily pump runtime data provided by the Village. The pump runtimes on the peak days were then multiplied by the firm capacity pumping rates to determine each lift station's peak day flow. The results of this analysis are summarized in Table 4-4. Note that the peak day flows at the Hoover Avenue, Roosevelt Drive, and Springville Drive lift stations exceed their respective firm capacities because at these lift stations, both lift station pumps were running simultaneously in response to the peak flow event.

Table 4-4: Lift Station Maximum Day Flow, 2020-2024

Lift Station	Peak Day	Pump Runtime (hrs)	Firm Capacity (cfs)	24-Hour Peak Flow (cfs)
Hoover Avenue	January 18, 2024	26.2[(1)]	0.59	0.65
Airline Drive	November 22, 2020	11.0	0.42	0.20
First Street	March 22, 2020	8.4	0.43	0.16
Industrial Park	April 10, 2020	4.5	1.02	0.20
Okray Avenue	March 24, 2020	15.6	0.69	0.46
Patti Drive	November 22, 2020	11.4	0.99	0.48
River Drive	November 22, 2020	13.7	0.49	0.28
Roosevelt Drive	March 24, 2020	36.6[(1)]	0.33	0.51
Springville Drive	March 22, 2020	36.3[(1)]	0.59	0.90
Mirage Circle	November 22, 2020	9.4	0.35	0.14
[(1)] Both pumps running during peak flow event.				

4.4 ESTIMATED EXISTING PEAK FLOWS

Peak flows at the WWTF and lift stations were estimated by multiplying the land use areas listed in Table 4-1 by the contributing rates listed in Table 4-2. To avoid double-counting, water-intensive facility areas were excluded from the overall land use totals. These specific facility flows were then incorporated by multiplying the facility areas in Table 4-1 by the corresponding rates in Table 4-3. The results of these calculations are displayed in Table 4-5.

Table 4-5: Calculated Existing Peak Flows

Location	Peak Flow (4.0 Factor, cfs)	Reduced Peaking Factor	Peak Flow (Reduced Factor, cfs)
Hoover Avenue LS	1.00	4.00	1.00
Airline Drive LS	0.23	4.00	0.23
First Street LS	0.15	4.00	0.15
Industrial Park LS	0.29	4.00	0.29
Okray Avenue LS	1.05	4.00	1.05
Patti Drive LS	0.27	4.00	0.27
River Drive LS	0.70	4.00	0.70
Roosevelt Drive LS	0.21	4.00	0.21
Springville Drive LS	2.33	3.90	2.27
Mirage Circle LS	0.26	4.00	0.26
WWTF	10.60	2.50	6.63

Reduced peaking factors were determined in accordance with the chart shown in Figure 4-1. This chart provides a curve showing the relationship between peaking factors and total flow. The chart was developed based on Water Pollution Control Federation No. 9, 1976, in accordance with WDNR Natural Resources Code 110.13 – *Sewer Design Criteria* subsection (1)(c).

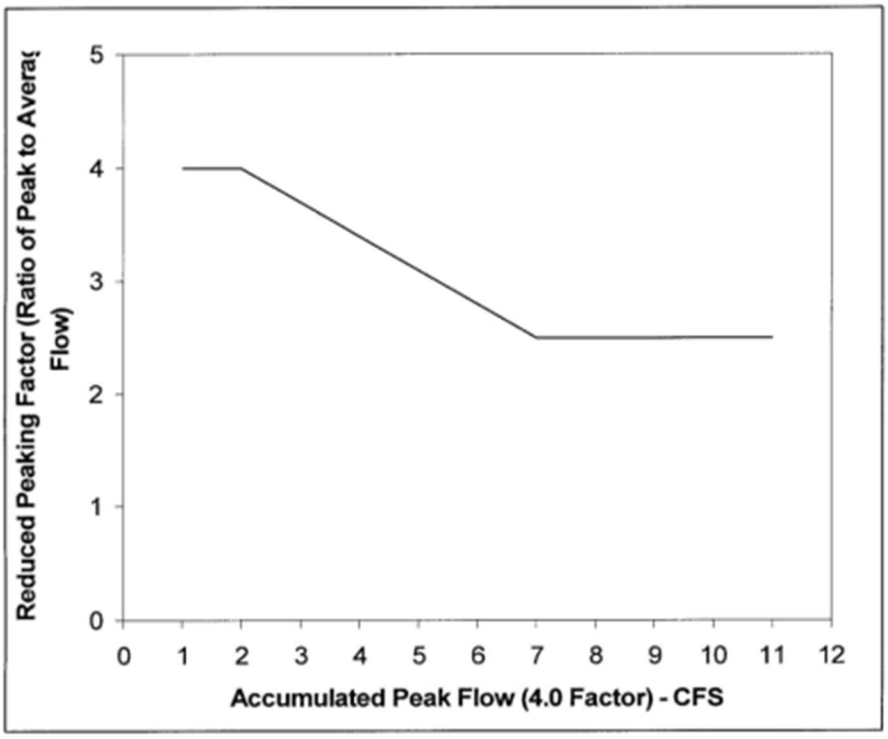


Figure 4-1: Reduced peaking factor curve.

4.5 EXISTING PEAK FLOW COMPARISON

Table 4-6 compares the peak flows calculated from pump runtime data to the peak flows estimated using land use contributing rates.

Table 4-6: Existing Peak Flow Comparison

Location	Peak Flow based on Pump Runtime Data (cfs)	Peak Flow Estimated using Land Use (Reduced Peaking Factor, cfs)
Hoover Avenue LS	0.65	1.00
Airline Drive LS	0.20	0.23
First Street LS	0.16	0.15
Industrial Park LS	0.20	0.29
Okray Avenue LS	0.46	1.05
Patti Drive LS	0.48	0.27
River Drive LS	0.28	0.70
Roosevelt Drive LS	0.51	0.21
Springville Drive LS	0.90	2.27
Mirage Circle LS	0.14	0.26
WWTF	4.22*	6.63

Notes:
*Sourced from Table 2-1 in the *Village of Plover Wastewater Treatment Facility – Facility Plan Amendment,* November 2025 draft copy. 4.22 cfs corresponds to the current WWTF peak hourly flow of 2.73 MGD.

The estimated WWTF peak flow of 6.63 cfs includes a peaking factor of 2.50. The peak flow would be 4.77 cfs is the current WWTF peak hour factor of 1.80 was used. The 1.80 WWTF peak hour factor is sourced from Table 2-1 in the *Village of Plover Wastewater Treatment Facility – Facility Plan Amendment*, November 2025 draft copy.

At first glance, the land use calculations appear to underestimate the existing peak flows at the Patti Drive and Roosevelt Drive lift stations. It's important to note that the peak pump runtime events for both these lift stations occurred in 2020 and were much larger than the peak runtimes in subsequent years. The Village confirmed that there were known inflow and infiltration (I/I) issues in the Roosevelt Drive lift station service area that have been resolved. The next largest peak day flows for Patti Drive lift station and Roosevelt Drive lift station both occurred in 2021 and were 0.29 cfs and 0.19 cfs, respectively. Both these flow values compare favorably with the land use estimates. There does not appear to be any concern that the land use estimates will result in underestimating the existing peak flows.

On the other hand, the land use calcualtions appears to significantly overestimate peak flows at the Hoover Avenue, Okray Avenue, River Drive, Springville Drive, and Mirage Circle lift stations. There are several possible reasons for this, including:

- The recommended NR peaking factors are larger than the actual peaking factors due to the relatively young age of the collection system. Younger collection systems typically have less I/I than older systems.
- Development densities (and therefore flow contributions) vary across service areas.

- Peak flow attenuations due to physical collection system components (e.g. pumping rate limitations at a lift station) are not reflected in land use flow estimates.
- Some combination of the previous three reasons.

No changes were made to the land use calculation procedure to compensate for apparent peak flow overestimations in individual lift station subbasins, as the procedure provides representative peak flow estimates for the overall 2025 SSA.

4.6 EXISTING PEAK FLOW VS. CAPACITY COMPARISON

Table 4-7 displays the existing critical gravity sewer peak flows estimated with land use contributing rates and compares them to sewer capacities. Critical gravity sewers with capacity limitations are highlighted in red. See Chapter 6 for further discussion on collection system deficiencies.

Table 4-7: Existing Critical Gravity Sewer Existing Sanitary Peak Flow vs. Capacity

2025 Critical Gravity Sewer ID	Sewer Name	Size (inch)	Slope (ft/ft)	Capacity (cfs) (n = 0.013)	Existing Sanitary Peak Flow (4.0 Peaking Factor, cfs)	Reduced Peaking Factor	Existing Sanitary Peak Flow (Reduced Factor, cfs)
LMS	Lombard Dr. & Hoover Ave.	8	0.00400	0.78	0.56	4.00	0.56
		10	0.00280	1.15	0.93	4.00	0.93
HVS	Hoover Ave. Lift Station Discharge	8	0.00400	0.78	1.00	4.00	1.00
ADS	Airline Dr. Lift Station Discharge	8	0.00400	0.78	0.23	4.00	0.23
FRS	First St. Lift Station Discharge	8	0.00400	0.78	0.15	4.00	0.15
		10	0.00280	1.15	0.84	4.00	0.84
		12	0.00220	1.67	1.05	4.00	1.05
OKS	Okray Ave. Lift Station Discharge	12	0.00220	1.67	1.05	4.00	1.05
		12	0.00280	1.89			
RSS	Roosevelt Dr. Lift Station Discharge	8	0.00300	0.67	0.21	4.00	0.21
MCS	Mirage Circle Lift Station Discharge	8	0.00400	0.78	0.26	4.00	0.26
		8	0.00280	0.65			
		8	0.00300	0.67			
		10	0.00400	1.37	0.70	4.00	0.70
RVS	River Dr. Lift Station Discharge	10	0.00280	1.15	0.70	4.00	0.70
IPS	Industrial Park Lift Station Discharge	10	0.00280	1.15	0.29	4.00	0.29
		10	0.00300	1.19			
PDS	Patti Dr. Lift Station Discharge	8	0.00400	0.78	0.27	4.00	0.27
		8	0.00300	0.67	0.27	4.00	0.27
BPS	Bentley Park Dr.	8	0.00300	0.67	Limited existing development area is served by sewer.		
CLS	Cleveland Ave.	8	0.03000	0.67	Limited existing development area is served by sewer.		
		8	0.04000	0.78			
EMS	East Maple Dr.	27	0.00067	8.02	Limited existing development area is served by sewer.		
NRS	North CTH R	18	0.00120	3.64	N/A		
		24	0.00080	6.40	0.11	4.00	0.11
PRS	Porter Rd.	36	0.00046	14.31	0.26	4.00	0.26
		36	0.00250	33.35			
SPS	Springville Dr. Lift Station	15	0.00150	2.50	2.33	3.90	2.27
		18	0.00210	4.81			
WWTF-NS-1	North Branch WWTF Segment 1	18	0.00210	4.81	2.66	3.80	2.53
		18	0.00120	3.64			
WWTF-NS-2	North Branch WWTF Segment 2	24	0.00080	6.40	4.13	3.36	3.47
WWTF-NS-3	North Branch WWTF Segment 3	27	0.00067	8.02	6.50	2.65	4.31
WWTF-NS-4	North Branch WWTF Segment 4	30	0.00070	10.85	6.82	2.55	4.35
SRS	South CTH R	21	0.00100	5.01	0.66	4.00	0.66
AWS	Arbor Hvn Way	21	0.00100	5.01	Limited existing development area is served by sewer.		
PLS	Pleasant Dr.	21	0.00100	5.01	Limited existing development area is served by sewer.		
		30	0.00058	9.88	1.08	4.00	1.08
		30	0.00090	12.31			
WWTF-SS	South Branch WWTF	30	0.00080	11.60	1.69	4.00	1.69
		15	0.00150	2.50			
WWTF-MS-1	WWTF Main Interceptor Segment 1	33	0.00060	12.96	9.45	2.50	5.91
WWTF-MS-2	WWTF Main Interceptor Segment 2	36	0.00046	14.31	10.60	2.50	6.63
	= Existing Capacity Limitation						

Table 4-8 compares the firm capacities of the lift stations to the peak flows calculated from pump runtime data and those estimated from land use contributing rates. Lift stations where the firm capacity is exceeded by the land use flow estimate, but not the pump runtime data, are highlighted in yellow. Lift stations where the firm capacity is exceeded by both land use estimates and pump runtime data calculations are highlighted in red. See Chapter 6 for further discussion on collection system deficiencies.

Table 4-8: Lift Station Firm Capacity vs. Existing Peak Flows

Location	Lift Station Firm Capacity (cfs)	Peak Flow based on Pump Runtime Data (cfs)	Existing Peak Flow based on Land Use (Reduced Peaking Factor, cfs)
Hoover Avenue LS	0.59	0.65	1.00
Airline Drive LS	0.42	0.20	0.23
First Street LS	0.43	0.16	0.15
Industrial Park LS	1.02	0.20	0.29
Okray Avenue LS	0.69	0.46	1.05
Patti Drive LS	0.99	0.48	0.27
River Drive LS	0.49	0.28	0.70
Roosevelt Drive LS	0.33	0.19	0.21
Springville Drive LS	0.59	0.90	2.27
Mirage Circle LS	0.35	0.14	0.26
	= Existing Capacity Limitation for both Peak Flow Calculation Methods		
	= Existing Capacity Limitation for Land Use Calculations Only		

5. 2045 AND 2065 SANITARY COLLECTION SYSTEM

Future boundaries for sewer service areas are typically established by regional planning commissions in accordance with WDNR guidance. The Village's sewer service area falls under the purview of the North Central Wisconsin Regional Planning Commission (NCRPC).

The NCRPC drafted the *Stevens Point Urban Area Sewer Service Area Plan – 2040 Update* as part of their planning efforts. A *NCRPC 2040 Sewer Service Area* for the entire Stevens Point Urban Area, including the Village of Plover, was established as part of this document. The *Stevens Point Urban Area Sewer Service Area Plan - 2040 Update* also identifies the geographic land area within which sanitary sewer service is determined to be acceptable, including the delineation of environmentally sensitive areas to be excluded from sewered development to protect water quality. Intergovernmental jurisdictional issues and processes are also identified to enable cost-effective sewer service through the year 2040.

The Village's portion of the *NCRPC 2040 Sewer Service Area* totals approximately 12,833 acres, while the Village's 2025 SSA is approximately 4,976 acres. The 2025 SSA would need to more than double in size by 2045 to fill out the Village's portion of the *NCRPC 2040 Sewer Service Area*. The likelihood of growth occurring at this rate is extremely low. Depending on actual growth rate, the Village's 2045 Sewer Service Area (2045 SSA) development boundary will most likely fall somewhere between the existing 2025 boundary and the full *NCRPC 2040 Sewer Service Area* boundary.

5.1 2045 SEWER SERVICE AREA BOUNDARY AND PLANNED DEVELOPMENT

A meeting was held with Village staff in June 2025 to discuss land areas that may be developed by 2045 within the Village's portion of the *NCRPC 2040 Sewer Service Area*. The anticipated land uses for the planned development areas were discussed and an exhibit displaying the 2045 SSA boundary with land uses was created. See Exhibit 3. Exhibit 3 also displays the boundary of the Village's portion of the *NCRPC 2040 Sewer Service Area* for additional context. Existing developed areas within the Town of Plover that are part of the intergovernmental boundary and utility service agreement between the Village of Plover and Town of Plover are also shown being incorporated into the 2045 SSA.

VILLAGE OF PLOVER WISCONSIN

DONOHUE

N

0 Feet 1,500

LEGEND

- 2040 Urban Area SSA Boundary
- 2045 Sewer Service Area Boundary
- 2025 Sewer Service Area
- Existing Developed Town of Plover Area
- Municipal Boundary
- Parcels
- Open Water

2045 Land Use

- Single Family
- Duplex
- Multi-Family (3+ Units)
- Commercial
- Commercial/Industrial
- Commercial/Residential
- Institutional / Governmental
- Industry
- Park
- Not Developable
- Railroad
- Road Right-of-Way

NOTE:

EXISTING DEVELOPMENT LAND USE DATA FROM PORTAGE COUNTY.

WISCONSIN RIVER

STH 54

I 39

PORTER RD

PLOVER RD

STH 54

I 39

EXHIBIT 3 - VILLAGE OF PLOVER 2045 SSA AND LAND USE

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

5.2 2065 SEWER SERVICE AREA BOUNDARY AND PLANNED DEVELOPMENT

A follow up meeting was held with Village staff in October 2025 to discuss land areas that may be developed by 2065. At the meeting Village staff decided that the Village's 2065 Sewer Service Area (2065 SSA) boundary would match the *NCRPC 2040 Sewer Service Area* boundary. The anticipated land uses for the 2065 planned development areas were discussed. An exhibit displaying the 2065 SSA boundary and land uses was created. See Exhibit 4. Existing developed areas within the Town of Plover that are part of the intergovernmental boundary and utility service agreement between the Village of Plover and Town of Plover are also shown being incorporated into the 2065 SSA.

VILLAGE OF PLOVER WISCONSIN

DONOHUE

N

Feet
0 1,500

LEGEND

- 2065 Sewer Service Area Boundary
- 2045 Sewer Service Area Boundary
- Existing Developed Town of Plover Area
- Municipal Boundary
- Parcels
- Open Water

2065 Land Use

- Single Family
- Duplex
- Multi-Family (3+ Units)
- Commercial
- Commercial/Industrial
- Commercial/Residential
- Institutional / Governmental
- Industry
- Park
- Not Developable
- Railroad
- Road Right-of-Way

NOTE:

THE 2065 SEWER SERVICE AREA BOUNDARY IS COINCIDENT WITH THE VILLAGE OF PLOVER'S PORTION OF THE 2040 URBAN AREA SSA BOUNDARY.

WISCONSIN RIVER
I 39
PORTER RD
PLOVER RD
STH 54
STH 54
I 39

EXHIBIT 4 - VILLAGE OF PLOVER 2065 SSA AND LAND USE

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

5.3 PROJECTED POPULATION GROWTH AND DEVELOPMENT

The acreage of the planned development areas shown in Exhibit 3 and Exhibit 4 was compared to projected population growth to verify that adequate land is being provided for each land use. Methodology from the *Stevens Point Urban Area Sewer Service Area Plan – 2040 Update* (Stevens Point 2040 SSA Plan) was utilized to estimate development requirements based on projected population growth.

Documentation related to the Village's projected population growth up to the year 2050 was gathered from the Wisconsin Department of Administration's (DoA) *Population Projections, Minor Civil Divisions 2020-2050 – Vintage 2024 Projections* and from the Village's *Water System Master Plan* dated February 6th, 2025. See Table 5-1.

Table 5-1: Village of Plover Projected Population Growth

Year	Wisconsin DoA Population Projections	Water System Master Plan Population Projections
2025	14,389	14,428
2040	14,425	17,234
2045	Not Published	17,983
2050	14,136	Not Estimated

DoA projections show the Village's population contracting after 2040, while the *Water System Master Plan* projections show continued growth. Village staff decided to use the *Water System Master Plan* population projections as the basis for projecting the amount of development by 2045 and 2065. Village staff also decided to assume linear population growth after 2045. Following these assumptions, the anticipated populations of the Village for purposes of this Master Plan study are 17,983 in 2045 and 21,538 in 2065.

5.3.1 PROJECTED RESIDENTIAL DEVELOPMENT

The Stevens Point 2040 SSA Plan based projections of residential land development around population growth, the projected number of people per household, and the projected number of housing units per acre of land, using the following values for the Village:

- Projected People per Household (PPH): 2.35
- Projected Number of Housing Units per Acre of Land (units per acre): 2.30

Dividing the projected population growth by PPH and then by units per acre results in 658 acres of projected residential development by 2045 and another 658 acres by 2065.

5.3.2 PROJECTED COMMERCIAL DEVELOPMENT

Projected commercial development in the Stevens Point 2040 SSA Plan is based around the concept of new job creation, the percentage of those new jobs that are commercial, and the number of commercial employees per acre. The Village's average annual employment growth rate in the plan was 1.15%, based on labor force information from the US Census Longitudinal Employer-Household Data. The Stevens Point 2040 SSA Plan assumed this rate would hold to 2040. This assumption was extended to 2045 and 2065 for this study. The projected number of new jobs added by 2045 and 2065 were:

- New Jobs between 2020 and 2045: 2,011
- New Jobs between 2045 and 2065: 2,078

The Stevens Point 2040 SSA Plan assumed 61.9% of these new jobs would be commercial and that there is an average of 4.02 commercial employees per acre in the Village. Multiplying the number of new jobs by the commercial job percentage and then dividing by employee area density yields the following projected commercial development:

- 310 commercial acres between 2020 and 2045.
- 320 commercial acres between 2045 and 2065.

5.3.3 PROJECTED INDUSTRIAL DEVELOPMENT

The Stevens Point 2040 SSA Plan assumed 38.1% of new jobs would be industrial and that there is an average of 4.06 industrial employees per acre for the Village. Multiplying the number of new jobs by the industrial job percentage and then dividing by employee area density yields the following projected industrial development:

- 189 industrial acres between 2020 and 2045.
- 195 industrial acres between 2045 and 2065.

5.3.4 PROJECTED INSTITUTIONAL/GOVERNMENTAL DEVELOPMENT

The Stevens Point 2040 SSA Plan multiplied the projected population growth by the number of institutional/governmental acres per person (sourced from the NCRPC) to project institutional/governmental development. The number of institutional/governmental acres per person for the Village in the plan was 0.06. Applying this value to the projected 2045 and 2065 population growth results in 214 acres of projected institutional/governmental development by 2045 and another 214 acres by 2065.

5.3.5 PROJECTED PARK DEVELOPMENT

The Stevens Point 2040 SSA Plan multiplied the projected population growth by the number of park acres per 1,000 people (a value recommended by the North Central Wisconsin Regional Planning Commission) to project future park development. The number of park acres per 1,000 people for the Village in the plan was 10.5. Applying this value to the projected 2045 and 2065 population growth results in 38 acres of projected park development by 2045 and another 38 acres by 2065.

5.3.6 PLANNED DEVELOPMENT VS. POPULATION PROJECTED DEVELOPMENT

Table 5-2 summarizes and compares the planned development within the 2045 SSA boundary to the population projected 2045 development. Existing developed areas of the Town of Plover incorporated into the 2045 SSA are not counted as planned development.

Table 5-2: 2045 Planned SSA Development vs. Population Projected Development

Land Use Type	Planned 2045 SSA Development (acres)	Population Projected 2045 Development (acres)
Residential	1,664	658
Commercial	989	310
Industrial	832	189
Institutional/ Governmental	6	214
Parks	31	38
Totals	3,522	1,409

There are 2,113 additional acres of planned development within the 2045 SSA than are projected based on population growth. The extra land allows for flexibility and choice in development sites and provides additional opportunities for development in the event certain lands are kept off the development market. Therefore, the 2045 SSA as presented in Exhibit 3 does not require any adjustments.

Note in Table 5-2 that the planned development areas for institutional/governmental and park are inadequate when compared to population projections. It is assumed that some of excess planned commercial land will be developed as institutional/governmental or parks to make up the difference. Making this assumption has no impacts on estimating future peak flows because the contributing rates for commercial land use are either the same or greater than the contributing rates for institutional/governmental land use and park land use. See Section 5.4.

Table 5-3 summarizes and compares the planned development within the 2065 SSA boundary to the projected 2065 development based on population growth.

Table 5-3: 2065 Planned SSA Development vs. Population Projected Development

Land Use Type	Planned 2065 SSA Development (acres)	Population Projected 2065 Development (acres)
Total Residential	2,155	658
Commercial	981	320
Industrial	508	195
Institutional/ Governmental	39	214
Parks	39	38
Totals	3,722	1,425

There are 2,297 additional acres of development within the planned 2065 SSA than are projected based on population growth. The 2065 SSA as presented in Exhibit 4 does not require any adjustments for the same reason as the 2045 SSA.

The planned 2065 SSA also does not provide adequate institutional/governmental land to meet projected population growth. Here too, it is assumed that some of the excess planned commercial land will be developed as institutional/governmental land.

It is recommended that the Village specifically monitor population growth, employment growth, and development rates over the next 20-year planning period to determine if revisions are required to the projected development methodology described in the Stevens Point 2040 SSA Plan.

5.4 PLANNED DEVELOPMENT CONTRIBUTING RATES

The land use contributing rates shown in Table 5-4 were used to estimate peak flows from planned development areas. Note that a peaking factor of 4.0 is included in the contributing rates. Land use calculations for submain and branch sewers typically use a 4.0 peaking factor in accordance with Wisconsin Department of Natural Resources (WDNR) Administrative Code NR 110.13(1)(c).

Table 5-4: Planned Development Land Use Contributing Rates

Land Use Type	Contributing Rate (4.0 Factor, cfs/acre)
Single-Family Residential	0.0028
Two-Family Residential	0.0056
Multi-Family Residential	0.0093
Commercial	0.0053
Institutional/Governmental	0.0053
Industrial	0.0019

The planned development land use contributing rates are not based on existing flow measurements and therefore differ from the existing land use contributing rates. They were calculated or selected using the following methodology:

Single-Family and Two-Family Residential

A per capita flow rate of 75 gallons per capita per day (gpcd) was assumed. 75 gpcd represents a midpoint between the value of 100 gpcd conventionally used for new sewer design and the United States Environmental Protection Agency (USEPA) estimated value of 40 to 60 gpcd for modern homes with modern water fixtures. A dwelling density of 2.2 homes per acre was sourced from the Village's zoning code. An average household size of 2.8 people per home was sourced from Table 2.1a (Average H-Hold Size, Owner-Occupied) in the Village of Plover 2025 Comprehensive Plan.

75 gpcd x 2.2 homes/acre x 2.8 people/home = 0.0007 cfs/acre x 4.0 peaking factor = 0.0028 cfs/acre.

It was assumed that the contributing rate for two-family residential would be double that of single-family residential.

Multi-Family Residential

This calculation followed the same methodology as single-family and two-family residential, except the home density and dwelling densities were adjusted. A home density of 10 units/acre was selected based on previous studies and a comparison to existing multi-family developments. A household size of 2.0 people/home was sourced from Table 2.1a (Average H-Hold Size, Renter-Occupied) in the Village of Plover 2025 Comprehensive Plan.

75 gpcd x 10 units/acre x 2.0 people/unit = 0.0023 cfs/acre x 4.0 peaking factor = 0.0093 cfs/acre.

Commercial, Institutional/Governmental, Industrial

The commercial, institutional/governmental, and industrial contributing rates were sourced from the Village's 2006 Sanitary Sewer Study. The 2006 contributing rates were based on population data, household sizes and inventories, previous water system studies, and Village real estate assessment information. Village staff indicated that they have no reason to suspect that the contributing rates have changed since 2006. The 2006 contributing rates of 0.0053 cfs/acre for commercial, 0.0053 cfs/acre for institutional/governmental, and 0.0019 cfs/acre for industrial land uses were used for this 2025 Master Plan study.

5.5 2045 AND 2065 SEWER SUB-BASINS, COLLECTION SYSTEM, AND SANITARY PEAK FLOWS

The 2045 SSA and 2065 SSA were broken into sub-basins based on GIS elevation data and locations where future sewers will likely connect to existing sewers. Peak flows from the sub-basins were estimated based on sub-basin land use and the planned development contributing rates. 2045 and 2065 collection system infrastructure was sized based on estimated peak flows. New lift stations were placed in planned development areas that lack sufficient topographic relief to connect to the existing sanitary collection system.

Determining final sizes for the 2045 and 2065 collection system infrastructure was an iterative process that involved balancing peak flows, sewer sizes, sub-basin areas, and existing topography. The result of this iterative process can be viewed in Exhibit 5, which displays a possible 2065 collection system layout for the Village.

2065 sub-basins are displayed in Exhibits 6, 7, and 8 for the northeast, southeast, and southwest parts of the Village, respectively. Sub-basin areas that drain to existing or future lift stations are colored in these exhibits. Basins were assigned names using the following convention:

- The first two letters represent an existing lift station the sewer region.
    - NE = northeast, SE = southeast, E = east, S = south, SW = southwest, X = existing central
    - SP = Springville Dr. LS
    - HV = Hoover Ave. LS
    - AR = Airline Dr. LS
    - FR = First St. LS
    - OK = Okray Ave. LS
    - RO = Roosevelt Dr. LS
    - RV = River Dr. LS
    - MG = Mirage Cr. LS
    - ID = Industrial Park LS
    - PT = Patti Dr. LS
- The following number indicates the diameter of the sewer in inches.
- The final numbers identify the branch and sub-branch(es) of the sub-basin's sewer.
    - For example, sub-basin SE-10-1-2-1 represents the southeast region, a 10-inch sewer, first branch off the SE region's final collection point, second sub-branch off the first branch, and first 10-inch sewer off the second sub-branch.

Table 5-5 compares the projected peak flows to the capacity of the collection system. Existing infrastructure components in the table are highlighted based on the following criteria:

- No highlight or blue highlight = No Capacity Limitations under any Scenario.
- Red = Existing Capacity Limitation.
- Orange = 2045 Capacity Limitation.
- Yellow = 2065 Capacity Limitation.
- Green = Improvement to address a Capacity Limitation.

Exhibits 9, 10, and 11 display the Exhibit 5 collection system at a smaller scale in the northeast, southeast, and southwest parts of the Village, respectively. The intent of these exhibits is to display Table 5-5's information in graphical form. The following information is shown on these exhibits:

- Rims, inverts, depths, sizes, and slopes of future gravity sewers.
- Existing critical gravity sewer locations.
- Future lift station service areas and future lift station rims and inverts.
- Existing lift station service areas.
- Future force main locations and sizes.
- Existing force main locations.
- Deficiencies in the existing collection system infrastructure.
- Improvements to address deficiencies.
- Additional considerations that should be made on specific parts of the system layout.

VILLAGE OF PLOVER WISCONSIN

DONOHUE

N

Feet
0 1,500

LEGEND

- Proposed Lift Station
- Existing Lift Station

Proposed Critical Gravity Sewers

- 8-Inch
- 10-Inch
- 12-Inch
- 15-Inch
- 18-Inch
- 21-Inch
- 27-Inch
- 30-Inch
- 48-Inch

Existing Critical Gravity Sewers

- 8-inch
- 10-inch
- 12-inch
- 15-inch
- 18-inch
- 21-inch
- 24-inch
- 27-inch
- 30-inch
- 36-inch
- Proposed Sanitary Force Main
- Existing Sanitary Force Main
- 2065 Sewer Service Area Boundary
- 2045 Sewer Service Area Boundary
- Parcels
- 2065 Airline Dr. Lift Station Sewer Service Area
- 2065 E-LS-1 Lift Station Sewer Service Area
- 2065 First St. Lift Station Sewer Service Area
- 2065 Hoover Ave. Lift Station Sewer Service Area
- 2065 Mirage Circle Lift Station Sewer Service Area
- 2065 NE-LS-1 Lift Station Sewer Service Area
- 2065 Okray Ave. Lift Station Sewer Service Area
- 2065 Patti Dr. Lift Station Sewer Service Area
- 2065 Roosevelt Dr. Lift Station Sewer Service Area
- 2065 River Dr. Lift Station Sewer Service Area
- 2065 S-LS-1 Lift Station Sewer Service Area
- 2065 S-LS-2 Lift Station Sewer Service Area
- 2065 SE-LS-1 Lift Station Sewer Service Area
- 2065 SE-LS-2 Lift Station Sewer Service Area
- 2065 Springville Pond Lift Station Sewer Service Area
- 2065 SW-LS-1 Lift Station Sewer Service Area
- 2065 SW-LS-2 Lift Station Sewer Service Area
- Open Water

I 39

HV-LS

FR-LS

OK-LS

AR-LS

SP-LS

NE-LS-1

PORTER DR

RV-LS

RO-LS

E-LS-1

WISCONSIN RIVER

VILLAGE OF PLOVER
WASTEWATER TREATMENT FACILITY

MG-LS

PLOVER RD

STH 54

PT-LS

SW-LS-2

SW-LS-1

S-LS-2

S-LS-1

SE-LS-1

SE-LS-2

EXHIBIT 5 - VILLAGE OF PLOVER 2065 SSA AND CRITICAL GRAVITY SEWERS, FORCE MAINS, AND LIFT STATIONS

VILLAGE OF PLOVER WISCONSIN

DONOHUE

N

0 Feet 600

LEGEND

- Proposed Lift Station
- Existing Lift Station
- Proposed Sub-basin Boundary
- Proposed Critical Gravity Sewers and Force Mains
- Existing Critical Gravity Sewers and Force Mains
- 5 Foot Portage County GIS Elevation Contours
- 2065 Airline Dr. Lift Station Sewer Service Area
- 2065 E-LS-1 Lift Station Sewer Service Area
- 2065 First St. Lift Station Sewer Service Area
- 2065 Hoover Ave. Lift Station Sewer Service Area
- 2065 Mirage Circle Lift Station Sewer Service Area
- 2065 NE-LS-1 Lift Station Sewer Service Area
- 2065 Okray Ave. Lift Station Sewer Service Area
- 2065 Patti Dr. Lift Station Sewer Service Area
- 2065 Roosevelt Dr. Lift Station Sewer Service Area
- 2065 River Dr. Lift Station Sewer Service Area
- 2065 S-LS-1 Lift Station Sewer Service Area
- 2065 S-LS-2 Lift Station Sewer Service Area
- 2065 SE-LS-1 Lift Station Sewer Service Area
- 2065 SE-LS-2 Lift Station Sewer Service Area
- 2065 Springville Pond Lift Station Sewer Service Area
- 2065 SW-LS-1 Lift Station Sewer Service Area
- 2065 SW-LS-2 Lift Station Sewer Service Area
- Parcels
- Open Water

WISCONSIN RIVER

I 39

PORTER RD

HV-8-1 HV-8-1 HV-8-1-1 HV-8-1-1 HV-10 HV-10 HV-10 HV-LS HV-LS

NE-8-1 NE-8-1-1 NE-24 NE-18-2 NE-15-2 NE-8-7 NE-8-6 NE-8-5 NE-24 NE-18-2 NE-12-3 NE-36 NE-36 NE-36 NE-36 NE-15-4 NE-15-4

FR-LS FR-LS

SP-15 SP-LS

AR-LS AR-LS

NE-LS-1-8-2 NE-LS-1-12 NE-LS-1-8-1 NE-LS-1

OK-LS OK-LS

X-18 X-18

RO-LS RO-LS RO-LS

X-24

E-LS-1-8-1 E-LS-1-18-2-1 E-LS-1 E-LS-1-18-2

RV-LS RV-LS

X-27

ID-LS

MG-LS MG-LS

EXHIBIT 6 - VILLAGE OF PLOVER 2065 SSA NORTHEAST SUB-BASINS AND LIFT STATION SERVICE AREAS

VILLAGE OF PLOVER WISCONSIN

DONOHUE

N

0 600 Feet

LEGEND

- Proposed Lift Station
- Existing Lift Station
- Proposed Sub-basin Boundary
- Proposed Critical Gravity Sewers and Force Mains
- Existing Critical Gravity Sewers and Force Mains
- 5 Foot Portage County GIS Elevation Contours
- 2065 Airline Dr. Lift Station Sewer Service Area
- 2065 E-LS-1 Lift Station Sewer Service Area
- 2065 First St. Lift Station Sewer Service Area
- 2065 Hoover Ave. Lift Station Sewer Service Area
- 2065 Mirage Circle Lift Station Sewer Service Area
- 2065 NE-LS-1 Lift Station Sewer Service Area
- 2065 Okray Ave. Lift Station Sewer Service Area
- 2065 Patti Dr. Lift Station Sewer Service Area
- 2065 Roosevelt Dr. Lift Station Sewer Service Area
- 2065 River Dr. Lift Station Sewer Service Area
- 2065 S-LS-1 Lift Station Sewer Service Area
- 2065 S-LS-2 Lift Station Sewer Service Area
- 2065 SE-LS-1 Lift Station Sewer Service Area
- 2065 SE-LS-2 Lift Station Sewer Service Area
- 2065 Springville Pond Lift Station Sewer Service Area
- 2065 SW-LS-1 Lift Station Sewer Service Area
- 2065 SW-LS-2 Lift Station Sewer Service Area
- Parcels
- Open Water

WISCONSIN RIVER

RV-LS

MG-LS

RO-LS

ID-LS

E-LS-1

S-LS-1

S-LS-2

SE-LS-1

SE-LS-2

STH 54

PLOVER RD

X-18 X-24 X-27 X-30 X-33

E-LS-1-8-1 E-LS-1-18-2-1 E-LS-1-18-2 E-LS-1-10-2 E-LS-1-8-2

SE-21-1-1 SE-10-1-2 SE-10-1-1 SE-15-1 SE-8-1-2 SE-10-1-2-2 SE-12-1-2-1 SE-10-1-2-1 SE-15-1-2 SE-30-1 SE-8-1-2-1 SE-10-2 SE-21-2 SE-LS-1-12 SE-LS-2-12 SE-15-2

SW-8-1 SW-LS-1-8

S-10-1 S-30 S-8-2 S-12-3 S-10-3

EXHIBIT 7 - VILLAGE OF PLOVER 2065 SSA SOUTHEAST SUB-BASINS AND LIFT STATION SERVICE AREAS

VILLAGE OF PLOVER WISCONSIN

DONOHUE

N

0 Feet 600

LEGEND

- Proposed Lift Station
- Existing Lift Station
- Proposed Sub-basin Boundary
- Proposed Critical Gravity Sewers and Force Mains
- Existing Critical Gravity Sewers and Force Mains
- 5 Foot Portage County GIS Elevation Contours
- 2065 Airline Dr. Lift Station Sewer Service Area
- 2065 E-LS-1 Lift Station Sewer Service Area
- 2065 First St. Lift Station Sewer Service Area
- 2065 Hoover Ave. Lift Station Sewer Service Area
- 2065 Mirage Circle Lift Station Sewer Service Area
- 2065 NE-LS-1 Lift Station Sewer Service Area
- 2065 Okray Ave. Lift Station Sewer Service Area
- 2065 Patti Dr. Lift Station Sewer Service Area
- 2065 Roosevelt Dr. Lift Station Sewer Service Area
- 2065 River Dr. Lift Station Sewer Service Area
- 2065 S-LS-1 Lift Station Sewer Service Area
- 2065 S-LS-2 Lift Station Sewer Service Area
- 2065 SE-LS-1 Lift Station Sewer Service Area
- 2065 SE-LS-2 Lift Station Sewer Service Area
- 2065 Springville Pond Lift Station Sewer Service Area
- 2065 SW-LS-1 Lift Station Sewer Service Area
- 2065 SW-LS-2 Lift Station Sewer Service Area
- Parcels
- Open Water

WISCONSIN RIVER

VILLAGE OF PLOVER
WASTEWATER TREATMENT FACILITY

OK-LS

RV-LS

MG-LS

PT-LS

SE-LS-1

SW-LS-2

S-LS-2

X-36

SW-15-3

STH 54

SW-18-2

SW-15-2

SW-12-2

SW-8-1

SW-LS-1-8

SW-LS-1-10

X-33

EXHIBIT 8 - VILLAGE OF PLOVER 2065 SSA SOUTHWEST SUB-BASINS AND LIFT STATION SERVICE AREAS

Table 5-5: Sanitary Collection System Capacity Analysis
(Northeast Area - Sub-basins to Springville Drive Lift Station)

Sub-basin	Development Year	Sub-basin Land Use	Acres	Unit Flowrates (cfs)	Flow (cfs)	Upstream Nodes	Additional Upstream Sub-basin Flow	Accumulated Flow (cfs, 4.0 Factor)	Reduced Peaking Factor	Accumulated Flow (cfs, Reduced Factor)	Existing (E) or Proposed (P) Sewer	Sewer Capacity (cfs)	Comments
NE-8-1-1	2065	I - New	126	0.0019	0.24			0.24	4.00	0.24	8" @ 0.40% (P)	0.78	
NE-8-1	2045	R - New I - New	31 74	0.0053 0.0019	0.16 0.14			0.30	4.00	0.30	8" @ 0.40% (P)	0.78	
	2065					NE-8-1-1	0.24	0.54	4.00	0.54			
NE-15-2	2065	M - New	259	0.0093	2.41			2.41	3.88	2.34	15" @ 0.15% (P)	2.50	
NE-18-2	2045	M - New	78	0.0093	0.73			0.73	4.00	0.73	18" @ 0.12% (P)	3.64	
	2065	M - New	78	0.0093	0.73	NE-15-2	2.41	3.87	3.44	3.33			
NE-24	2025	M - Existing	17	0.0067	0.11			0.11	4.00	0.11	24" @ 0.08% (E)	6.40	2025 Critical Gravity Sewer NRS Existing gravity sewer on east side of CTH R north of Porter Rd.
	2045	R - New	55	0.0053	0.29	NE-8-1 NE-18-2	0.30 0.73	1.43	4.00	1.43			
	2065					NE-8-1 NE-18-2	0.54 3.87	4.81	3.16	3.80			
NE-12-3	2065	R - New	277	0.0053	1.47			1.47	4.00	1.47	12" @ 0.22% (P)	1.67	
NE-LS-1-8-1	2065	SF - New	185	0.0028	0.52			0.52	4.00	0.52	8" @ 0.40% (P)	0.78	
NE-LS-1-12	2045	M - New	64	0.0093	0.60			0.60	4.00	0.60	12" @ 0.22% (P)	1.67	
	2065					NE-LS-1-8-1	0.52	1.12	4.00	1.12			
NE-LS-1-8-2	2045	SF - New	131	0.0028	0.37			0.37	4.00	0.37	8" @ 0.40% (P)	0.78	
NE-LS-1	2045					NE-LS-1-12 NE-LS-1-8-2	0.60 0.37	0.97	4.00	0.97	N/A		New Lift Station and dual 8-inch force mains (one for flow and one for backup). 0.97 cfs in 8-inch force main = 2.75 fps 1.49 cfs in 8-inch force main = 4.23 fps
	2065					NE-LS-1-12 NE-LS-1-8-2	1.12 0.37	1.49	4.00	1.49			
NE-15-4	2045	SF - New M - New	19 35	0.0028 0.0093	0.05 0.33	NE-LS-1	0.97	1.35	4.00	1.35	15" @ 0.15% (P)	2.50	
	2065					NE-LS-1	1.49	1.87	4.00	1.87			
NE-8-5	2045	M - New R - New	34 37	0.0093 0.0053	0.32 0.20			0.52	4.00	0.52	8" @ 0.40% (P)	0.78	
NE-8-6	2045	M - New R - New	13 15	0.0093 0.0053	0.12 0.08			0.20	4.00	0.20	8" @ 0.40% (P)	0.78	
NE-8-7	2045	M - New R - New	14 23	0.0093 0.0053	0.13 0.12			0.25	4.00	0.25	8" @ 0.40% (P)	0.78	Connects to 2025 Critical Gravity Sewer BPS
NE-36	2025	SF - Existing M - Existing I - Existing	50 6 4	0.0019 0.0067 0.0019	0.10 0.04 0.01	NE-24	0.11	0.26	4.00	0.26	36" @ 0.046% (E)	14.31	2025 Critical Gravity Sewer PRS Existing Porter Rd. gravity sewer between CTH R and Bel-Aire Dr.
	2045	SF - Existing SF - New D - New R - New	50 55 10 15	0.0019 0.0028 0.0056 0.0053	0.10 0.15 0.06 0.08	NE-24 NE-15-4 NE-8-5 NE-8-6 NE-8-7	1.43 1.35 0.52 0.20 0.25	4.14	3.36	3.48			
	2065					NE-24 NE-12-3 NE-15-4 NE-8-5 NE-8-6 NE-8-7	4.81 1.47 1.87 0.52 0.20 0.25	9.51	2.50	5.94			
NE-27	2045					NE-36 AR-LS	4.14 0.25	4.39	3.28	3.60	27" @ 0.067% (P)	8.02	New 27-inch influent gravity sewer from Porter Rd./Bel Aire Dr. intersection to new Springville Dr. Lift Station. Resolves capacity limitation in existing 15-inch sewer that flows to existing Springville Dr. Lift Station.
	2065					NE-36 AR-LS	9.51 0.25	9.76	2.50	6.10			
HV-8-1-1	2025	M - Existing R - Existing	17 89	0.0067 0.0036	0.11 0.32			0.43	4.00	0.43	8" @ 0.40% (E)	0.78	2025 Critical Gravity Sewer LMS Existing 8-inch gravity sewer crossing I-39 at Lombard Dr.
	2045	M - Existing R - Existing M - New R- New	17 89 2 23	0.0067 0.0036 0.0093 0.0053	0.11 0.32 0.02 0.12			0.57	4.00	0.57			
HV-8-1	2025	M - Existing C - Existing	11 16	0.0067 0.0036	0.07 0.06	HV-8-1-1	0.43	0.56	4.00	0.56	8" @ 0.40% (E)	0.78	2025 Critical Gravity Sewer LMS Existing 8-inch gravity sewer in Lombard Dr. between Hoover Ave. and I-39.
	2045	M - Existing C - Existing D - New R - New C - New	10 16 1 29 5	0.0067 0.0036 0.0056 0.0053 0.0053	0.07 0.06 0.01 0.15 0.03	HV-8-1-1	0.57	0.89	4.00	0.89			
HV-10	2025	SF - Existing D - Existing M - Existing R - Existing	39 27 29 3	0.0019 0.0038 0.0067 0.0036	0.07 0.10 0.19 0.01	HV-8-1	0.56	0.93	4.00	0.93	10" @ 0.28% (E)	1.15	2025 Critical Gravity Sewer LMS Existing 10-inch gravity sewer in Hoover Ave. between Lombard Dr. and the Hoover Ave. Lift Station.
	2045	SF - Existing D - Existing M - Existing R - Existing SF - New R - New	38 26 29 3 21 20	0.0019 0.0038 0.0067 0.0036 0.0028 0.0053	0.07 0.10 0.19 0.01 0.06 0.11	HV-8-1	0.89	1.43	4.00	1.43			
HV-LS	2025	SF - Existing D - Existing M - Existing R - Existing C - Existing	66 27 57 92 16	0.0019 0.0038 0.0067 0.0036 0.0036	0.13 0.10 0.38 0.33 0.06			1.00	4.00	1.00	Ex Hoover Ave. LS Firm Capacity Approx. 0.59 cfs (265 gpm)		1.00 cfs in 8-inch force main = 2.84 fps 1.50 cfs in 8-inch force main = 4.25 fps HV-LS discharges to 2025 Critical Gravity Sewer HVS This 8-inch sewer has a capacity of 0.78 cfs.
	2045	SF - Existing D - Existing M - Existing R - Existing C - Existing SF - New D - New M - New R - New C - New	66 27 57 92 16 21 1 2 72 5	0.0019 0.0038 0.0067 0.0036 0.0036 0.0028 0.0056 0.0093 0.0053 0.0053	0.13 0.10 0.38 0.33 0.06 0.06 0.01 0.02 0.38 0.03			1.50	4.00	1.50			
AR-LS	2025	SF - Existing D - Existing C - Existing I - Existing	52 23 8 6	0.0019 0.0038 0.0036 0.0019	0.10 0.09 0.03 0.01			0.23	4.00	0.23	Ex Airline Rd. LS Firm Capacity Approx. 0.42 cfs (190 gpm)		Existing Airline Dr. Lift Station.
	2045	SF - Existing D - Existing C - Existing I - Existing SF - New D - New	52 23 8 5 5 2	0.0019 0.0038 0.0036 0.0019 0.0028 0.0056	0.10 0.09 0.03 0.01 0.01 0.01			0.25	4.00	0.25			
SP-15	2025	SF - Existing M - Existing C - Existing	379 4 26	0.0019 0.0067 0.0036	0.72 0.03 0.09	HV-LS AR-LS NE-36	1.00 0.23 0.26	2.33	3.90	2.27	15" @ 0.15% (E)	2.50	2025 Critical Gravity Sewer SPS Existing 15-inch gravity sewer to existing Springville Dr. Lift Station.
	2045	SF - Existing M - Existing C - Existing SF - New	379 4 26 8	0.0019 0.0067 0.0036 0.0028	0.72 0.03 0.09 0.02	HV-LS	1.50	2.36	3.89	2.30			
SP-LS	2025					SP-15	2.33	2.33	3.90	2.27	Ex Springville Dr. LS Firm Capacity Approx. 0.59 cfs (265 gpm)		2.27 cfs in 16-inch force main = 1.63 fps 4.35 cfs in 16-inch force main = 3.13 fps 7.58 cfs in 16-inch force main = 5.45 fps
	2045					SP-15 NE-27	2.36 4.39	6.75	2.58	4.35			
	2065					SP-15 NE-27	2.36 9.76	12.12	2.50	7.58			

= Capacity Limitation in 2025
= Capacity Limitation in 2045
= Capacity Limitation in 2065
= Possible Improvement to Address a Capacity Limitation

SF - Existing = Existing Single-Family Residential
SF - New = New Development Single-Family Residential
D - Existing = Existing Two-Family Residential
D - New = New Development Two-Family Residential
M - Existing = Existing Multi-Family Residential
M - New = New Development Multi-Family Residential

C - Existing = Existing Institutional/Governmental
C - New = New Development Institutional/Governmental
R - Existing = Existing Commercial
R - New = New Development Commercial
I - Existing = Existing Industrial
I - New = New Development Industrial

Table 5-5: Sanitary Collection System Capacity Analysis
(Southeast Area - Sub-basins to 30-Inch Pleasant Drive Sewer Crossing I-39)

Sub-basin	Development Year	Sub-basin Land Use	Acres	Unit Flowrates (cfs)	Flow (cfs)	Upstream Nodes	Additional Upstream Sub-basin Flow	Accumulated Flow (cfs, 4.0 Factor)	Reduced Peaking Factor	Accumulated Flow (cfs, Reduced Factor)	Existing (E) or Proposed (P) Sewer	Sewer Capacity (cfs)	Comments
E-LS-1-8-1	2045	I - New	187	0.0019	0.36			0.36	4.00	0.36	8" @ 0.40% (P)	0.78	
E-LS-1-8-2	2065	SF - New	96	0.0028	0.27			0.27	4.00	0.27	8" @ 0.40% (P)	0.78	
E-LS-1-10-2	2065	R - New	85	0.0053	0.45	E-LS-1-8-2	0.27	0.85	4.00	0.85	10" @ 0.28% (P)	1.15	
		I - New	66	0.0019	0.13								
E-LS-1-18-2	2065	SF - New	128	0.0028	0.36	E-LS-1-10-2	0.85	2.63	3.81	2.51	18" @ 0.12% (P)	3.64	
		M - New	142	0.0093	1.32								
		R - New	10	0.0053	0.05								
		I - New	24	0.0019	0.05								
ID-LS	2025	SF - Existing	32	0.0019	0.06			0.29	4.00	0.29	Ex Industrial Park LS Firm Capacity Approx. 1.02 cfs (460 gpm)		Existing Industrial Park Lift Station may be made obsolete by the construction of new lift station E-LS-1.
		C - Existing	13	0.0036	0.05								
		Water Way Plant	7	0.0257	0.18								
		I - Existing	2	0.0019	0.00								
	2045	SF - Existing	32	0.0019	0.06			0.39	4.00	0.39			
		C - Existing	13	0.0036	0.05								
		Water Way Plant	7	0.0257	0.18								
		I - Existing	2	0.0019	0.00								
		SF - New	2	0.0028	0.01								
		C - New	13	0.0053	0.07								
		I - New	9	0.0019	0.02								
E-LS-1-18-2-1	2045	R - New	78	0.0053	0.41	ID-LS	0.39	0.96	4.00	0.96	18" @ 0.12% (P)	3.64	
		I - New	85	0.0019	0.16								
	2065					ID-LS	0.39	3.59	3.52	3.16			
						E-LS-1-18-2	2.63						
E-LS-1	2045					E-LS-1-8-1	0.36	1.32	4.00	1.32	N/A		New Lift Station and dual 10-inch force mains (one for flow and one for backup). 1.32 cfs in 10-inch force main = 2.44 fps 3.38 cfs in 10-inch force main = 6.26 fps
						E-LS-1-18-2-1	0.96						
	2065					E-LS-1-8-1	0.36	3.95	3.42	3.38			
						E-LS-1-18-2-1	3.59						
SE-10-1-1-2	2065	SF - New	99	0.0028	0.28			0.77	4.00	0.77	10" @ 0.28% (P)	1.15	
		R - New	93	0.0053	0.49								
SE-10-1-1	2045	SF - New	66	0.0028	0.18			0.18	4.00	0.18	10" @ 0.28% (P)	1.15	
	2065					SE-10-1-1-2	0.77	0.95	4.00	0.95			
SE-21-1-1	2025	SF - Existing	16	0.0019	0.03	ID-LS	0.29	0.66	4.00	0.66	21" @ 0.10% (E)	5.01	2025 Critical Gravity Sewer SRS Existing gravity sewer on east side of CTH R between Plover Rd. and Pleasant Dr.
		R - Existing	1	0.0036	0.00								
		C - Existing	27	0.0036	0.10								
		I - Existing	31	0.0019	0.06								
		Monogr. Moore	12	0.0150	0.18								
	2045	SF - Existing	15	0.0019	0.03	E-LS-1	1.32	2.18	3.95	2.15			
		R - Existing	1	0.0036	0.00	SE-10-1-1	0.18						
		C - Existing	20	0.0036	0.07								
		I - Existing	31	0.0019	0.06								
		Monogr. Moore	12	0.0150	0.18								
		SF - New	32	0.0028	0.09								
		R - New	43	0.0053	0.23								
		I - New	11	0.0019	0.02								
	2065					E-LS-1	3.95	5.58	2.93	4.09			
						SE-10-1-1	0.95						
SE-10-1-2-2	2065	SF - New	262	0.0028	0.73			0.73	4.00	0.73	10" @ 0.40% (P)	1.15	
SE-10-1-2-1	2065	SF - New	67	0.0028	0.19	SE-10-1-2-2	0.73	0.92	4.00	0.92	10" @ 0.28% (P)	1.15	
SE-12-1-2-1	2045	SF - New	78	0.0028	0.22			0.22	4.00	0.22	12" @ 0.22% (P)	1.67	
	2065					SE-10-1-2-1	0.92	1.14	4.00	1.14			
SE-8-1-2-1	2065	SF - New	78	0.0028	0.22			0.22	4.00	0.22	8" @ 0.40% (P)	0.78	
SE-8-1-2	2045	SF - New	106	0.0028	0.30			0.30	4.00	0.30	8" @ 0.40% (P)	0.78	Connects to 2025 Critical Gravity Sewer AWS
SE-15-1-2	2045	SF - Existing	86	0.0019	0.16	SE-8-1-2	0.30	1.03	4.00	1.03	15" @ 0.15% (P)	2.50	Construction of this sewer will require relaying an existing segment of 21-inch sewer on Pleasant Dr. between Cumberland Dr. and Arbor Hvn. Way. The existing sewer in this segment is too shallow.
		D - Existing	4	0.0038	0.02	SE-12-1-2-1	0.22						
		R - Existing	10	0.0036	0.04								
		SF - New	52	0.0028	0.15								
		D - New	23	0.0056	0.13								
		R - New	1	0.0053	0.01								
	2065					SE-8-1-2	0.30	2.17	3.95	2.14			
						SE-12-1-2-1	1.14						
						SE-8-1-2-1	0.22						
SE-LS-1-12	2045	SF - New	2	0.0028	0.01			0.52	4.00	0.52	12" @ 0.22% (P)	1.67	
		R - New	96	0.0053	0.51								
	2065	R - New	119	0.0053	0.63			1.15	4.00	1.15			
SE-LS-1	2045					SE-LS-1-12	0.52	0.52	4.00	0.52	N/A		New Lift Station and dual 6-inch force mains (one for flow and one for backup). 0.52 cfs in 6-inch force main = 2.60 fps 1.15 cfs in 6-inch force main = 5.75 fps
	2065					SE-LS-1-12	1.15	1.15	4.00	1.15			
SE-LS-2-12	2065	SF - New	330	0.0028	0.92			1.43	4.00	1.43	12" @ 0.22% (P)	1.67	
		R - New	97	0.0053	0.51								
SE-LS-2	2065					SE-LS-2-12	1.43	1.43	4.00	1.43	N/A		New Lift Station and dual 8-inch force mains (one for flow and one for backup). 1.43 cfs in 8-inch force main = 4.06 fps
SE-15-2	2045					SE-LS-1	0.52	0.52	4.00	0.52	15" @ 0.15% (P)	2.50	
	2065	R- New	148	0.0053	0.78	SE-LS-1	1.15	1.93	4.00	1.93			
SE-10-2	2045	SF - New	56	0.0028	0.16			0.37	4.00	0.37	10" @ 0.28% (P)	1.15	Pipe sized to optimize gravity drainage within existing developed area adjacent to I-39.
		R - New	40	0.0053	0.21								
SE-21-2	2045	SF - New	211	0.0028	0.59	SE-10-2	0.37	1.48	4.00	1.48	21" @ 0.10% (P)	5.01	
						SE-15-2	0.52						
	2065					SE-10-2	0.37	4.32	3.30	3.56			
						SE-15-2	1.93						
						SE-LS-2	1.43						
SE-8-1	2045	I - New	35	0.0019	0.07			0.07	4.00	0.07	8" @ 0.40% (P)	0.78	
SE-15-1	2045	M - New	170	0.0093	1.58			1.94	4.00	1.94	15" @ 0.15% (P)	2.50	
		R - New	68	0.0053	0.36								
SE-30-1	2025	SF - Existing	86	0.0019	0.16	SE-21-1-1	0.66	1.08	4.00	1.08	30" @ 0.058% (E)	9.88	2025 Critical Gravity Sewer PLS Existing gravity sewer in Pleasant Drive from CTH R to I-39 crossing.
		D - Existing	4	0.0038	0.02								
		M - Existing	30	0.0067	0.20								
		R - Existing	10	0.0036	0.04								
	2045	M - Existing	30	0.0067	0.20	SE-21-1-1	2.18	7.12	2.50	4.45			
		M - New	17	0.0093	0.16	SE-15-1	1.94						
		I - New	34	0.0019	0.06	SE-8-1	0.07						
						SE-15-1-2	1.03						
						SE-21-2	1.48						
	2065					SE-21-1-1	5.58	14.50	2.50	9.06			
						SE-15-1	1.94						
						SE-8-1	0.07						
						SE-15-1-2	2.17						
						SE-21-2	4.32						

= Capacity Limitation in 2025
= Capacity Limitation in 2045
= Capacity Limitation in 2065
= Possible Improvement to Address a Capacity Limitation

SF - Existing = Existing Single-Family Residential
SF - New = New Development Single-Family Residential
D - Existing = Existing Two-Family Residential
D - New = New Development Two-Family Residential
M - Existing = Existing Multi-Family Residential
M - New = New Development Multi-Family Residential

C - Existing = Existing Institutional/Governmental
C - New = New Development Institutional/Governmental
R - Existing = Existing Commercial
R - New = New Development Commercial
I - Existing = Existing Industrial
I - New = New Development Industrial

Table 5-5: Sanitary Collection System Capacity Analysis
(North Central Area - Sub-basins from Springville Lift Station to 33-inch Sewer at Maple Drive/Post Road Intersection)

Sub-basin	Development Year	Sub-basin Land Use	Acres	Unit Flowrates (cfs)	Flow (cfs)	Upstream Nodes	Additional Upstream Sub-basin Flow	Accumulated Flow (cfs, 4.0 Factor)	Reduced Peaking Factor	Accumulated Flow (cfs, Reduced Factor)	Existing (E) or Proposed (P) Sewer	Sewer Capacity (cfs)	Comments
X-18	2025	SF - Existing	171	0.0019	0.32	SP-LS	2.33	2.66	3.80	2.53	18" @ 0.12% (E)	3.64	2025 Critical Gravity Sewer WWTF-NS-1 Gravity sewer receives discharge from the existing Springville Dr. Lift Station.
		C - Existing	3	0.0036	0.01								
	2045	SF - Existing	171	0.0019	0.32			0.36	4.00	0.36			
		C - Existing	3	0.0036	0.01								
		SF - New	9	0.0028	0.03								
FR-LS	2025	SF - Existing	64	0.0019	0.12			0.15	4.00	0.15	Ex First Lift Station Firm Capacity Approx. 0.43 cfs (195 gpm)		Existing First Ave. Lift Station.
		D - Existing	4	0.0038	0.02								
		R - Existing	4	0.0036	0.01								
	2045	SF - Existing	64	0.0019	0.12			0.16	4.00	0.16			
		D - Existing	4	0.0038	0.02								
		R - Existing	4	0.0036	0.01								
		SF - New	2	0.0028	0.01								
OK-LS	2025	SF - Existing	78	0.0019	0.15	FR-LS	0.15	1.05	4.00	1.05	Ex Okray Lift Station Firm Capacity Approx. 0.69 cfs (311 gpm)		
		D - Existing	10	0.0038	0.04								
		M - Existing	33	0.0067	0.22								
		R - Existing	59	0.0036	0.21								
		C - Existing	2	0.0036	0.01								
		I - Existing	16	0.0019	0.03								
		Mono Post Rd	6	0.0400	0.24								
	2045	SF - Existing	76	0.0019	0.14	FR-LS	0.16	1.20	4.00	1.20			
		D - Existing	10	0.0038	0.04								
		M - Existing	33	0.0067	0.22								
		R - Existing	59	0.0036	0.21								
		C - Existing	2	0.0036	0.01								
		I - Existing	16	0.0019	0.03								
		Mono Post Rd	6	0.0400	0.24								
		D - New	1	0.0056	0.01								
		R - New	27	0.0053	0.14								
RO-LS	2025	SF - Existing	113	0.0019	0.21			0.21	4.00	0.21	Ex Roosevelt Lift Station Firm Capacity Approx. 0.33 cfs (150 gpm)		
	2045	SF - Existing	113	0.0019	0.21			0.68	4.00	0.68			
		SF - New	36	0.0028	0.10								
		M - New	40	0.0093	0.37								
X-24	2025	SF - Existing	60	0.0019	0.11	X-18	2.66	4.13	3.36	3.47	24" @ 0.08% (E)	6.40	2025 Critical Gravity Sewer WWTF-NS-2 Existing gravity sewer in Washington Ave. between Roosevelt Dr. and Pine Dr.
		R - Existing	15	0.0036	0.05	OK-LS	1.05						
		C - Existing	13	0.0036	0.05	RO-LS	0.21						
	2045	SF - Existing	60	0.0019	0.11	X-18	0.36	9.23	2.50	5.77			
		R - Existing	15	0.0036	0.05	OK-LS	1.20						
		C - Existing	13	0.0036	0.05	RO-LS	0.68						
		SF - New	1	0.0028	0.00	SP-LS	6.75						
		R - New	6	0.0053	0.03								
	2065					X-18	0.36	14.60	2.50	9.13	30" @ 0.08% (P)	11.60	
						OK-LS	1.20						
						RO-LS	0.68						
						SP-LS	12.12						
MG-LS	2025	SF - Existing	19	0.0019	0.04			0.26	4.00	0.26	Ex Mirage Lift Station Firm Capacity Approx. 0.67 cfs (300 gpm)		Existing Mirage Circle Lift Station.
		M - Existing	19	0.0067	0.13								
		C - Existing	21	0.0036	0.08								
		I - Existing	3	0.0019	0.01								
	2045	SF - Existing	18	0.0019	0.03			0.27	4.00	0.27			
		M - Existing	19	0.0067	0.13								
		C - Existing	21	0.0036	0.08								
		I - Existing	3	0.0019	0.01								
		R - New	1	0.0028	0.00								
		C - New	2	0.0053	0.01								
		I - New	3	0.0019	0.01								
RV-LS	2025	SF - Existing	112	0.0019	0.21	MG-LS	0.26	0.70	4.00	0.70	Ex River Lift Station Firm Capacity Approx. 0.49 cfs (220 gpm)		
		D - Existing	9	0.0038	0.03								
		M - Existing	5	0.0067	0.03								
		R - Existing	6	0.0036	0.02								
		C - Existing	14	0.0036	0.05								
		I - Existing	55	0.0019	0.10								
	2045	SF - Existing	112	0.0019	0.21	MG-LS	0.27	0.74	4.00	0.74			
		D - Existing	9	0.0038	0.03								
		M - Existing	5	0.0067	0.03								
		R - Existing	6	0.0036	0.02								
		C - Existing	13	0.0036	0.05								
		I - Existing	55	0.0019	0.10								
		SF - New	4	0.0028	0.01								
		R - New	3	0.0056	0.02								
		I - New	1	0.0019	0.00								
X-27	2025	SF - Existing	96	0.0019	0.18	X-24	4.13	6.50	2.65	4.31	27" @ 0.067% (E)	8.02	2025 Critical Gravity Sewer WWTF-NS-3 Existing gravity sewer in Washington Ave. between Pine Dr. and Vineyard Dr.
		D - Existing	3	0.0038	0.01	RV-LS	0.70						
		M - Existing	5	0.0067	0.03								
		R - Existing	175	0.0036	0.63								
		C - Existing	13	0.0036	0.05								
		I - Existing	93	0.0019	0.18								
		Del Monte	58	0.0100	0.58								
		Oso	1	0.0130	0.01								
	2045	SF - Existing	96	0.0019	0.18	X-24	9.23	11.96	2.50	7.48			
		D - Existing	2	0.0038	0.01	RV-LS	0.74						
		M - Existing	5	0.0067	0.03								
		R - Existing	175	0.0036	0.63								
		C - Existing	7	0.0036	0.03								
		I - Existing	144	0.0019	0.27								
		Del Monte	58	0.0100	0.58								
		Oso	1	0.0130	0.01								
		SF - New	3	0.0028	0.01								
		M - New	8	0.0093	0.07								
		R - New	33	0.0053	0.17								
	2065					X-24	14.60	17.33	2.50	10.83	30" @ 0.067% (P)	10.62	
						RV-LS	0.74						
X-30	2025	SF - Existing	19	0.0019	0.04	X-27	6.50	6.82	2.55	4.35	30" @ 0.07% (E)	10.85	2025 Critical Gravity Sewer WWTF-NS-4 Existing gravity sewer in Vineyard Dr. between Washington Ave. and Post Rd. and in Post Rd. between Vineyard Dr. and Maple Dr. The 2065 capacity limitation is small enough relative to the estimated peak flow that a capacity improvement does not appear to be necessary.
		M - Existing	2	0.0067	0.01								
		R - Existing	12	0.0036	0.04								
		I - Existing	11	0.0019	0.02								
		Ingredion	10	0.0210	0.21								
	2045	SF - Existing	12	0.0019	0.02	X-27	11.96	12.40	2.50	7.75			
		M - Existing	2	0.0067	0.01								
		R - Existing	12	0.0036	0.04								
		I - Existing	4	0.0019	0.01								
		Ingredion	10	0.0260	0.26								
		R - New	19	0.0053	0.10								
	2065					X-27	17.33	17.77	2.50	11.11			

= Capacity Limitation in 2025
= Capacity Limitation in 2045
= Capacity Limitation in 2065
= Possible Improvement to Address a Capacity Limitation

SF - Existing = Existing Single-Family Residential
SF - New = New Development Single-Family Residential
D - Existing = Existing Two-Family Residential
D - New = New Development Two-Family Residential
M - Existing = Existing Multi-Family Residential
M - New = New Development Multi-Family Residential

C - Existing = Existing Institutional/Governmental
C - New = New Development Institutional/Governmental
R - Existing = Existing Commercial
R - New = New Development Commercial
I - Existing = Existing Industrial
I - New = New Development Industrial

Table 5-5: Sanitary Collection System Capacity Analysis
(South Central Area - Sub-basins from 30-inch Pleasant Drive Sewer Crossing I-39 to 33-inch Sewer at Maple Drive/Post Road Intersection)

Sub-basin	Development Year	Sub-basin Land Use	Acres	Unit Flowrates (cfs)	Flow (cfs)	Upstream Nodes	Additional Upstream Sub-basin Flow	Accumulated Flow (cfs, 4.0 Factor)	Reduced Peaking Factor	Accumulated Flow (cfs, Reduced Factor)	Existing (E) or Proposed (P) Sewer	Sewer Capacity (cfs)	Comments
S-LS-1-8	2045	R - New	33	0.0053	0.17			0.17	4.00	0.17	8" @ 0.40% (P)	0.78	
S-LS-1	2045					S-LS-1-8	0.17	0.17	4.00	0.17	N/A		New Lift Station and dual 3-inch force mains (one for flow and one for backup). 0.17 cfs in 3-inch force main = 3.46 cfs
S-10-3	2045	R - New	111	0.0053	0.59	S-LS-1	0.17	0.76	4.00	0.76	10" @ 0.28% (P)	1.15	
S-12-3	2045	SF - New R - New C - New	26 36 2	0.0028 0.0053 0.0053	0.07 0.19 0.01	S-10-3	0.76	1.03	4.00	1.03	12" @ 0.22% (P)	1.67	
	2065	R - New	19	0.0053	0.10	S-10-3	0.76	1.13	4.00	1.13			
S-8-2	2065	R - New	31	0.0053	0.16			0.16	4.00	0.16	8" @ 0.40% (P)	0.78	
S-10-1	2045	M - New R - New I - New	67 6 96	0.0093 0.0053 0.0019	0.62 0.03 0.18			0.83	4.00	0.83	10" @ 0.28% (P)	1.15	
S-30	2025	SF - Existing D - Existing M - Existing R - Existing Pleasant Drive Plant I - Existing	61 7 7 41 10 35	0.0019 0.0038 0.0067 0.0036 0.0189 0.0019	0.12 0.03 0.05 0.15 0.19 0.07	SE-30-1	1.08	1.69	4.00	1.69	30" @ 0.08% (E) 15" @ 0.15% (E)	11.60 (30") 2.50 (15")	30-inch and 15-inch are 2025 Critical Gravity Sewer WWTF-SS 27-inch connects to 2025 Critical Gravity Sewer EMS
	2045	SF - Existing D - Existing M - Existing R - Existing Pleasant Drive Plant I - Existing M - New R - New C - New	60 6 7 41 10 35 67 240 1	0.0019 0.0038 0.0067 0.0036 0.0189 0.0019 0.0093 0.0053 0.0053	0.11 0.02 0.05 0.15 0.19 0.07 0.62 1.27 0.01	SE-30-1 S-12-3 S-10-1	7.12 1.03 0.83	11.47	2.50	7.17	30" @ 0.08% (E) 15" @ 0.15% (E) 27" @ 0.08% (P)	11.60 (30") 11.26 (15" + 27")	Existing 30-inch gravity sewer in Pleasant Dr. from I-39 to Post Rd. and in Post Rd. from Pleasant Dr. to Lincoln Ave. Existing 15-inch gravity sewer and future 27-inch relief gravity sewer in or adjacent to Post Rd. from Lincoln Ave. to Maple Dr.
	2065					SE-30-1 S-12-3 S-10-1 S-8-2	14.50 1.13 0.83 0.16	19.11	2.50	11.94	30" @ 0.08% (E) 15" @ 0.15% (E) 27" @ 0.08% (P)	11.60 (30") 11.26 (15" + 27")	These sewer segments will have a very slight capacity limitation by 2065. The limitation is small enough relative to the estimated peak flow that a capacity improvement does not appear to be necessary.

= Capacity Limitation in 2025
= Capacity Limitation in 2045
= Capacity Limitation in 2065
= Possible Improvement to Address a Capacity Limitation

SF - Existing = Existing Single-Family Residential
SF - New = New Development Single-Family Residential
D - Existing = Existing Two-Family Residential
D - New = New Development Two-Family Residential
M - Existing = Existing Multi-Family Residential
M - New = New Development Multi-Family Residential

C - Existing = Existing Institutional/Governmental
C - New = New Development Institutional/Governmental
R - Existing = Existing Commercial
R - New = New Development Commercial
I - Existing = Existing Industrial
I - New = New Development Industrial

Table 5-5: Sanitary Collection System Capacity Analysis
(Southwest Area - Sub-basins from 33-inch Pipe at Maple Drive/Post Road Intersection to WWTF)

Sub-basin	Development Year	Sub-basin Land Use	Acres	Unit Flowrates (cfs)	Flow (cfs)	Upstream Nodes	Additional Upstream Sub-basin Flow	Accumulated Flow (cfs, 4.0 Factor)	Reduced Peaking Factor	Accumulated Flow (cfs, Reduced Factor)	Existing (E) or Proposed (P) Sewer	Sewer Capacity (cfs)	Comments
SW-8-1	2045	SF - New	30	0.0028	0.08			0.08	4.00	0.08	8" @ 0.40% (P)	0.78	
	2065	C - New	9	0.0053	0.05			0.13	4.00	0.13			
PT-LS	2025	SF - Existing	23	0.0019	0.04			0.27	4.00	0.27	Ex Patti Lift Station Firm Capacity Approx. 0.60 cfs (270 gpm)		Existing Patti Dr. Lift Station.
		D - Existing	1	0.0038	0.00								
		M - Existing	34	0.0067	0.23								
	2045	SF - Existing	23	0.0019	0.04			0.27	4.00	0.27			
		D - Existing	1	0.0038	0.00								
		M - Existing	34	0.0067	0.23								
		SF - New	1	0.0028	0.00								
S-LS-2	2065	SF - New	101	0.0028	0.28			0.28	4.00	0.28	N/A		Connects to 2025 Critical Gravity Sewer CLS New Lift Station and dual 4-inch force mains (one for flow and one for backup). 0.28 cfs in 4-inch force main = 3.27 fps
X-33	2025	SF - Existing	196	0.0019	0.37	X-30	6.82	9.45	2.50	5.91	33" @ 0.06% (E)	12.96	2025 Critical Gravity Sewer WWTF-MS-1 Existing gravity sewer in Maple Dr. from Post Rd. to Jackson Ave.
		D - Existing	30	0.0038	0.11	S-30	1.69						
		M - Existing	25	0.0067	0.17	PT-LS	0.27						
		R - Existing	3	0.0036	0.01								
		C - Existing	3	0.0036	0.01								
		I - Existing	2	0.0019	0.00								
	2045	SF - Existing	186	0.0019	0.35	X-30	12.40	25.19	2.50	15.74	48" @ 0.06% (P)	35.19	
		D - Existing	30	0.0038	0.11	S-30	11.47						
		M - Existing	25	0.0067	0.17	PT-LS	0.27						
		R - Existing	3	0.0036	0.01	SW-8-1	0.08						
		C - Existing	3	0.0036	0.01								
		I - Existing	2	0.0019	0.00								
		D - New	6	0.0056	0.03								
		M - New	17	0.0093	0.16								
		R - New	25	0.0053	0.13								
	2065					X-30	17.77	38.53	2.50	24.08			
						S-30	19.11						
						PT-LS	0.27						
						SW-8-1	0.13						
						S-LS-2	0.28						
SW-LS-1-8	2045	SF - New	95	0.0028	0.27			0.27	4.00	0.27	8" @ 0.40% (P)	0.78	
	2065	SF - New	39	0.0028	0.11			0.54	4.00	0.54			
		C - New	30	0.0053	0.16								
SW-LS-1-10	2065	M - New	79	0.0093	0.73			0.81	4.00	0.81	10" @ 0.28% (P)	1.15	
		I - New	40	0.0019	0.08								
SW-LS-1	2045					SW-LS-1-8	0.27	0.27	4.00	0.27	N/A		New Lift Station and dual 6-inch force mains (one for flow and one for backup). 0.27 cfs in 6-inch force main = 1.34 fps 1.35 cfs in 6-inch force main = 6.88 fps
	2065					SW-LS-1-8	0.54	1.35	4.00	1.35			
						SW-LS-1-10	0.81						
SW-12-2	2045					SW-LS-1	0.27	0.27	4.00	0.27	12" @ 0.22% (P)	1.67	
	2065	I - New	39	0.0019	0.07	SW-LS-1	1.35	1.42	4.00	1.42			
SW-15-2	2045					SW-12-2	0.27	0.27	4.00	0.27	15" @ 0.15% (P)	2.50	
	2065	M - New	40	0.0093	0.37	SW-12-2	1.42	1.86	4.00	1.86			
		I - New	39	0.0019	0.07								
SW-18-2	2045	M - New	69	0.0093	0.64	SW-15-2	0.27	1.12	4.00	1.12	18" @ 0.12% (P)	3.64	
		I - New	113	0.0019	0.21								
	2065					SW-15-2	1.86	2.71	3.79	2.57			
SW-LS-2	2065	SF - New	218	0.0028	0.61			1.50	4.00	1.50	N/A		New Lift Station and dual 10-inch force mains (one for flow and one for backup). 1.50 cfs in 10-inch force main = 2.77 fps
		R - New	113	0.0053	0.60								
		I - New	152	0.0019	0.29								
SW-15-3	2045	SF - New	118	0.0028	0.33			0.42	4.00	0.42	15" @ 0.15% (P)	2.50	
		I - New	46	0.0019	0.09								
	2065	SF - New	16	0.0028	0.04	SW-LS-2	1.50	2.33	3.90	2.27			
		R - New	28	0.0053	0.15								
		I - New	115	0.0019	0.22								
X-36	2025	SF - Existing	225	0.0019	0.43	X-33	9.45	10.60	2.50	6.63	36" @ 0.046% (E)	14.31	2025 Critical Gravity Sewer WWTF-MS-2 Existing gravity sewer from Jackson Ave. to WWTF.
		D - Existing	8	0.0038	0.03								
		M - Existing	31	0.0067	0.21								
		I - Existing	63	0.0019	0.12								
		McCain Inf.	26	0.0140	0.36								
	2045	SF - Existing	225	0.0019	0.43	X-33	25.19	28.15	2.50	17.59	48" @ 0.046% (P)	30.81	
		D - Existing	8	0.0038	0.03	SW-18-2	1.12						
		M - Existing	31	0.0067	0.21	SW-15-3	0.42						
		I - Existing	63	0.0019	0.12								
		SF - New	27	0.0028	0.08								
		D - New	3	0.0056	0.02								
		R - New	5	0.0053	0.03								
		I - New	72	0.0019	0.14								
		McCain Inf.	26	0.0140	0.36								
	2065	SF - New	51	0.0028	0.14	X-33	38.53	45.13	2.50	28.21			
						SW-18-2	2.71						
						SW-15-3	2.33						
WWTF	2025					X-36	10.60	10.60	2.50	6.63			Wastewater Treatment Facility
	2045					X-36	28.15	28.15	2.50	17.59			
	2065					X-36	45.13	45.13	2.50	28.21			

= Capacity Limitation in 2025
= Capacity Limitation in 2045
= Capacity Limitation in 2065
= Possible Improvement to Address a Capacity Limitation

SF - Existing = Existing Single-Family Residential
SF - New = New Development Single-Family Residential
D - Existing = Existing Two-Family Residential
D - New = New Development Two-Family Residential
M - Existing = Existing Multi-Family Residential
M - New = New Development Multi-Family Residential

C - Existing = Existing Institutional/Governmental
C - New = New Development Institutional/Governmental
R - Existing = Existing Commercial
R - New = New Development Commercial
I - Existing = Existing Industrial
I - New = New Development Industrial

VILLAGE OF PLOVER WISCONSIN

DONOHUE

N

0 Feet 600

LEGEND

- Proposed Lift Station
- Existing Lift Station
- Proposed Sewer Sub-basin Loading Point
- Proposed Sewer Elevation Point

Proposed Critical Gravity Sewers

- 8-Inch
- 10-Inch
- 12-Inch
- 15-Inch
- 18-Inch
- 21-Inch
- 27-Inch
- 30-Inch
- 48-Inch

Existing Critical Gravity Sewers

- 8-inch
- 10-inch
- 12-inch
- 15-inch
- 18-inch
- 21-inch
- 24-inch
- 27-inch
- 30-inch
- 36-inch

- Proposed Sanitary Force Main
- Existing Sanitary Force Main
- 5 Foot Portage County GIS Elevation Contours
- 2065 Sewer Service Area Boundary
- 2045 Sewer Service Area Boundary
- 2065 Airline Dr. Lift Station Sewer Service Area
- 2065 E-LS-1 Lift Station Sewer Service Area
- 2065 First St. Lift Station Sewer Service Area
- 2065 Hoover Ave. Lift Station Sewer Service Area
- 2065 Mirage Circle Lift Station Sewer Service Area
- 2065 NE-LS-1 Lift Station Sewer Service Area
- 2065 Okray Ave. Lift Station Sewer Service Area
- 2065 Patti Dr. Lift Station Sewer Service Area
- 2065 Roosevelt Dr. Lift Station Sewer Service Area
- 2065 River Dr. Lift Station Sewer Service Area
- 2065 S-LS-1 Lift Station Sewer Service Area
- 2065 S-LS-2 Lift Station Sewer Service Area
- 2065 SE-LS-1 Lift Station Sewer Service Area
- 2065 SE-LS-2 Lift Station Sewer Service Area
- 2065 Springville Pond Lift Station Sewer Service Area
- 2065 SW-LS-1 Lift Station Sewer Service Area
- 2065 SW-LS-2 Lift Station Sewer Service Area
- Parcels
- Open Water

WISCONSIN RIVER

I 39

PORTER RD

SUB-BASIN HV-10 LOADING POINT

IMPROVEMENT ID: LMS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

SUB-BASIN HV-8-1 LOADING POINT

SUB-BASIN HV-8-1-1 LOADING POINT

SUB-BASIN HV-LS LOADING POINT

IMPROVEMENT ID: HV-LS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

IMPROVEMENT ID: HVS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

HV-LS

SUB-BASIN FR-LS LOADING POINT

FR-LS

IMPROVEMENT ID: SPS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

SUB-BASIN SP-15 LOADING POINT

CONNECT TO EX 12-INCH STUB
RIM: 1092.80
INV: 1077.81
DEPTH: 14.99 FT

CONNECT TO EX 8-INCH STUB
RIM: 1092.13
INV: 1078.55
DEPTH: 13.58 FT

27-INCH @ 0.067%

AR-LS

IMPROVEMENT ID: SP-LS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

IMPROVEMENT ID: AR-LS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

SUB-BASIN AR-LS LOADING POINT

SP-LS

IMPROVEMENT ID: OK-LS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

OK-LS

SUB-BASIN X-18 LOADING POINT

SUB-BASIN OK-LS LOADING POINT

IMPROVEMENT ID: RO-LS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

DUAL 16-INCH FM

SUB-BASIN X-24 LOADING POINT

ENLARGED AND EXTENDED FM

RO-LS

IMPROVEMENT ID: RV-LS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

30-INCH @ 0.08%

IMPROVEMENT ID: WWTF-NS-2
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

SUB-BASIN RO-LS LOADING POINT

SUB-BASIN X-27 LOADING POINT

RV-LS

SUB-BASIN RV-LS LOADING POINT

SUB-BASIN MG-LS LOADING POINT

MG-LS

CONNECT TO EX 18-INCH STUB
RIM: 1104
INV: 1083.65
DEPTH: 20.35 FT

SUB-BASIN NE-8-6 LOADING POINT
RIM: 1098
INV: 1089
DEPTH: 9 FT

SUB-BASIN NE-8-7 LOADING POINT
RIM: 1096
INV: 1088
DEPTH: 8 FT

SUB-BASIN NE-8-5 LOADING POINT
RIM: 1097
INV: 1091.50
DEPTH: 5.5 FT

8-INCH @ 0.40%

8-INCH @ 0.40%

8-INCH @ 0.40%

8-INCH @ 0.40%

8-INCH @ 0.40%

8-INCH @ 0.40%

8-INCH @ 0.40%

8-INCH @ 0.40%

8-INCH @ 0.40%

8-INCH @ 0.40%

8-INCH @ 0.40%

8-INCH @ 0.40%

SUB-BASIN NE-8-1 LOADING POINT
RIM: 1109
INV: 1095
DEPTH: 14 FT

8-INCH SEWER FROM NE 8-1-1 TO STUB WILL SERVE PLANNED INDUSTRIAL DEVELOPMENTS. SEWER SIZE MAY NEED TO BE LARGER IF NEW INDUSTRIES GENERATE MORE SANITARY FLOW THAN ASSUMED IN TRADITIONAL METHOD CALCULATIONS.

SUB-BASIN NE-8-1-1 LOADING POINT
RIM: 1116
INV: 1107
DEPTH: 9 FT

18-INCH @ 0.12%

15-INCH @ 0.15%

SUB-BASIN NE-15-2 LOADING POINT
RIM: 1113
INV: 1090
DEPTH: 23 FT

SUB-BASIN NE-24 LOADING POINT
RIM: 1104
INV: 1081.12
DEPTH: 22.88 FT

SUB-BASIN NE-18-2 LOADING POINT
RIM: 1108
INV: 1084
DEPTH: 24 FT

CONNECT TO BPS
RIM: 1095.00
INV: 1081.19
DEPTH: 13.81 FT

12-INCH @ 0.22%

RIM: 1100
INV: 1084
DEPTH: 16 FT

12-INCH @ 0.22%

SUB-BASIN NE-36 LOADING POINT
RIM: 1095.49
INV: 1076.92
DEPTH: 18.57 FT

SUB-BASIN NE-12-3 LOADING POINT
RIM: 1106
INV: 1088
DEPTH: 18 FT

8-INCH @ 0.40%

SUB-BASIN NE-15-4 LOADING POINT
RIM: 1091
INV: 1081
DEPTH: 10 FT

15-INCH @ 0.15%

RIM: 1096
INV: 1090
DEPTH: 6 FT

DUAL 8-INCH FM

12-INCH @ 0.22%

8-INCH @ 0.40%

NE-LS-1

SUB-BASIN NE-LS-1-8-2 LOADING POINT
RIM: 1087
INV: 1077
DEPTH: 10 FT

SUB-BASIN NE-LS-1-8-1 LOADING POINT
RIM: 1095
INV: 1077
DEPTH: 18 FT

8-INCH @ 0.40%

RIM: 1093
INV: 1083
DEPTH: 10 FT

SUB-BASIN E-LS-1-8-1 LOADING POINT
RIM: 1083
INV: 1077
DEPTH: 6 FT

SUB-BASIN NE-LS-1-12 LOADING POINT
RIM: 1090
INV: 1066
DEPTH: 24 FT

LIFT STATION NE-LS-1
RIM: 1087
LOWEST INCOMING INV: 1061
DEPTH TO LOWEST INV: 26 FT

LIFT STATION E-LS-1
RIM: 1087
LOWEST INCOMING INV: 1054
DEPTH TO LOWEST INV: 33 FT

SUB-BASIN E-LS-1-18-2-1 LOADING POINT
RIM: 1092
INV: 1067
DEPTH: 25 FT

RIM: 1095
INV: 1083
DEPTH: 12 FT

8-INCH @ 0.40%

18-INCH @ 0.12%

18-INCH @ 0.12%

E-LS-1

RIM: 1100
INV: 1071
DEPTH: 29 FT

8-INCH @ 0.40%

EXHIBIT 9 - VILLAGE OF PLOVER 2065 SSA AND NORTHEAST SANITARY COLLECTION SYSTEM

VILLAGE OF PLOVER WISCONSIN

DONOHUE

N

0 Feet 600

IT IS RECOMMENDED THAT ADDITIONAL STUDIES BE PERFORMED ON E-LS-1 SERVICE AREA TO VERIFY IF CONFIGURATION SHOWN IS THE MOST COST-EFFECTIVE MEANS OF PROVIDING SANITARY SERVICE. THE DEPTH OF THE SEWERS SHOWN MAY MAKE THE CONSTRUCION OF ADDITIONAL LIFT STATIONS MORE ECONOMICAL.

SUB-BASIN E-LS-1-8-1 LOADING POINT
RIM: 1083
INV: 1077
DEPTH: 6 FT

IMPROVEMENT ID: RO-LS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

DUAL 16-INCH FM

ENLARGED AND EXTENDED FM

RO-LS

LIFT STATION E-LS-1
RIM: 1087
LOWEST INCOMING INV: 1054
DEPTH TO LOWEST INV: 33 FT

SUB-BASIN E-LS-1-18-2-1 LOADING POINT
RIM: 1092
INV: 1067
DEPTH: 25 FT

RIM: 1095
INV: 1083
DEPTH: 12 FT

18-INCH @ 0.12%

E-LS-1

RIM: 1100
INV: 1071
DEPTH: 29 FT

8-INCH @ 0.40%

18-INCH @ 0.12%

30-INCH @ 0.08%

SUB-BASIN X-24 LOADING POINT

SUB-BASIN RO-LS LOADING POINT

RV-LS

WISCONSIN RIVER

SUB-BASIN RV-LS LOADING POINT

IMPROVEMENT ID: WWTF-NS-2
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

SUB-BASIN X-27 LOADING POINT

DUAL 10-INCH FM

IMPROVEMENT ID: RV-LS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

IMPROVEMENT ID: WWTF-NS-3
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

SUB-BASIN E-LS-1-18-2 LOADING POINT
RIM: 1101
INV: 1073
DEPTH: 28 FT

SUB-BASIN MG-LS LOADING POINT

MG-LS

30-INCH @ 0.067%

SUB-BASIN SE-15-1 LOADING POINT
RIM: 1086
INV: 1078
DEPTH: 8 FT

SUB-BASIN SE-21-1-1 LOADING POINT
RIM: 1092.49
INV: 1078.32
DEPTH: 14.17 FT

IMPROVEMENT ID: ID-LS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

10-INCH @ 0.28%

RIM: 1100
INV: 1081
DEPTH: 19 FT

SUB-BASIN X-33 LOADING POINT

SUB-BASIN X-36 LOADING POINT

CONNECT TO WWTF-MS
RIM: 1073.27
INV: 1054.08
DEPTH: 19.19 FT

IMPROVEMENT ID: WWTF-MS-1
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

SUB-BASIN X-30 LOADING POINT

CONNECT TO EMS

SUB-BASIN SE-10-1-1-2 LOADING POINT
RIM: 1102
INV: 1090
DEPTH: 12 FT

PLOVER RD

10-INCH @ 0.28%

10-INCH @ 0.28%

SUB-BASIN E-LS-1-10-2 LOADING POINT
RIM: 1103
INV: 1086
DEPTH: 17 FT

15-INCH @ 0.15%

27-INCH @ 0.08%

8-INCH @ 0.40%

8-INCH @ 0.40%

48-INCH @ 0.06%

SUB-BASIN S-10-1 LOADING POINT
RIM: 1080
INV: 1068
DEPTH: 12 FT

CONNECT TO SRS
RIM: 1093.05
INV: 1076.30
DEPTH: 16.75 FT

SUB-BASIN SE-10-1-1 LOADING POINT
RIM: 1098
INV: 1082
DEPTH: 16 FT

SUB-BASIN E-LS-1-8-2 LOADING POINT
RIM: 1104
INV: 1091
DEPTH: 13 FT

10-INCH @ 0.28%

SUB-BASIN SW-8-1 LOADING POINT
RIM: 1072
INV: 1062
DEPTH: 10 FT

CONNECT TO AWS
RIM: 1098.00
INV: 1084.51
DEPTH: 13.49 FT

8-INCH @ 0.40%

RIM: 1105
INV: 1094
DEPTH: 11 FT

IMPROVEMENT ID: WWTF-SS
SEE CHAPTER 6 OF MASTER PLAN STUDY REPORT FOR MORE INFORMATION.

SUB-BASIN SE-8-1-2 LOADING POINT
RIM: 1104
INV: 1097
DEPTH: 7 FT

CONNECT TO CLS
RIM: 1076.20
INV: 1070.08
DEPTH: 6.12 FT

CONNECT TO WWTF-SS

DUAL 4-INCH FM

8-INCH @ 0.40%

CONNECT TO WWTF-SS

SEGMENT OF EXISTING SEWER NEEDS TO BE RELAID AT GREATER DEPTH TO MAXIMIZE GRAVITY DRAINAGE AREA TO EAST.

CONNECT TO PLS
RIM: 1091.60
INV: 1069.08
DEPTH: 22.52 FT

SUB-BASIN S-30-1 LOADING POINT

CONNECT TO PLS
RIM: 1097.70
INV: 1072.33
DEPTH: 25.37 FT

SUB-BASIN SE-12-1-2-1 LOADING POINT
RIM: 1101
INV: 1078
DEPTH: 23 FT

SUB-BASIN SE-10-1-2-1 LOADING POINT
RIM: 1103
INV: 1082
DEPTH: 21 FT

SUB-BASIN SE-10-1-2-2 LOADING POINT
RIM: 1107
INV: 1091
DEPTH: 16 FT

SUB-BASIN S-8-2 LOADING POINT
RIM: 1076
INV: 1069
DEPTH: 7 FT

SUB-BASIN S-30 LOADING POINT

CONNECT TO PLS
RIM: 1095.00
INV: 1070.51
DEPTH: 24.49 FT

15-INCH @ 0.15%

12-INCH @ 0.22%

10-INCH @ 0.28%

8-INCH @ 0.40%

10-INCH @ 0.28%

SUB-BASIN SW-LS-1-8 LOADING POINT
RIM: 1072
INV: 1062
DEPTH: 10 FT

RIM: 1080
INV: 1070
DEPTH: 10 FT

CONNECT TO WWTF-SS
RIM: 1085.00
INV: 1065.48
DEPTH: 19.52 FT

CONNECT TO PLS
RIM: 1089
INV: 1071
DEPTH: 18 FT

SUB-BASIN SE-15-1-2 LOADING POINT
RIM: 1100
INV: 1075
DEPTH: 25 FT

8-INCH @ 0.40%

S-LS-2

8-INCH @ 0.40%

8-INCH @ 0.40%

SUB-BASIN SE-8-1 LOADING POINT
RIM: 1089
INV: 1078
DEPTH: 11 FT

SUB-BASIN SE-8-1-2-1 LOADING POINT
RIM: 1097
INV: 1091
DEPTH: 6 FT

RIM: 1100
INV: 1091
DEPTH: 9 FT

21-INCH @ 0.10%

LIFT STATION SE-LS-2
RIM: 1091
LOWEST INCOMING INV: 1063
DEPTH TO LOWEST INV: 28 FT

RIM: 1091
INV: 1074
DEPTH: 17 FT

RIM: 1092
INV: 1084
DEPTH: 8 FT

LIFT STATION S-LS-2
RIM: 1078
LOWEST INCOMING INV: 1056
DEPTH TO LOWEST INV: 22 FT

8-INCH @ 0.40%

RIM: 1094
INV: 1075
DEPTH: 19 FT

SUB-BASIN SE-10-2 LOADING POINT
RIM: 1093
INV: 1080
DEPTH: 13 FT

SUB-BASIN S-12-3 LOADING POINT
RIM: 1084
INV: 1070
DEPTH: 14 FT

RIM: 1100
INV: 1090
DEPTH: 10 FT

8-INCH @ 0.40%

10-INCH @ 0.28%

SUB-BASIN S-LS-1-8 LOADING POINT
RIM: 1087
INV: 1079
DEPTH: 8 FT

DUAL 8-INCH FM

SE-LS-2

12-INCH @ 0.22%

SUB-BASIN SE-LS-2-12 LOADING POINT
RIM: 1095
INV: 1069.50
DEPTH: 25.5 FT

10-INCH @ 0.28%

RIM: 1092
INV: 1082
DEPTH: 10 FT

SUB-BASIN S-10-3 LOADING POINT
RIM: 1085
INV: 1074
DEPTH: 11 FT

8-INCH @ 0.40%

DUAL 3-INCH FM

RIM: 1091
INV: 1084
DEPTH: 7 FT

8-INCH @ 0.40%

21-INCH @ 0.10%

8-INCH @ 0.40%

LIFT STATION S-LS-1
RIM: 1086
LOWEST INCOMING INV: 1074
DEPTH TO LOWEST INV: 12 FT

S-LS-1

SUB-BASIN SE-21-2 LOADING POINT
RIM: 1095
INV: 1078
DEPTH: 17 FT

SUB-BASIN SE-15-2 LOADING POINT
RIM: 1096
INV: 1083
DEPTH: 13 FT

15-INCH @ 0.15%

I 39

12-INCH @ 0.22%

SUB-BASIN SE-LS-1-12 LOADING POINT
RIM: 1092
INV: 1075
DEPTH: 17 FT

RIM: 1099
INV: 1091
DEPTH: 8 FT

SE-LS-1

LIFT STATION SE-LS-1
RIM: 1086
LOWEST INCOMING INV: 1065
DEPTH TO LOWEST INV: 21 FT

DUAL 6-INCH FM

LEGEND

- Proposed Lift Station
- Existing Lift Station
- Proposed Sewer Sub-basin Loading Point
- Proposed Sewer Elevation Point

Proposed Critical Gravity Sewers

- 8-Inch
- 10-Inch
- 12-Inch
- 15-Inch
- 18-Inch
- 21-Inch
- 27-Inch
- 30-Inch
- 48-Inch

Existing Critical Gravity Sewers

- 8-inch
- 10-inch
- 12-inch
- 15-inch
- 18-inch
- 21-inch
- 24-inch
- 27-inch
- 30-inch
- 36-inch

- Proposed Sanitary Force Main
- Existing Sanitary Force Main
- 5 Foot Portage County GIS Elevation Contours
- 2065 Sewer Service Area Boundary
- 2045 Sewer Service Area Boundary
- 2065 Airline Dr. Lift Station Sewer Service Area
- 2065 E-LS-1 Lift Station Sewer Service Area
- 2065 First St. Lift Station Sewer Service Area
- 2065 Hoover Ave. Lift Station Sewer Service Area
- 2065 Mirage Circle Lift Station Sewer Service Area
- 2065 NE-LS-1 Lift Station Sewer Service Area
- 2065 Okray Ave. Lift Station Sewer Service Area
- 2065 Patti Dr. Lift Station Sewer Service Area
- 2065 Roosevelt Dr. Lift Station Sewer Service Area
- 2065 River Dr. Lift Station Sewer Service Area
- 2065 S-LS-1 Lift Station Sewer Service Area
- 2065 S-LS-2 Lift Station Sewer Service Area
- 2065 SE-LS-1 Lift Station Sewer Service Area
- 2065 SE-LS-2 Lift Station Sewer Service Area
- 2065 Springville Pond Lift Station Sewer Service Area
- 2065 SW-LS-1 Lift Station Sewer Service Area
- 2065 SW-LS-2 Lift Station Sewer Service Area
- Parcels
- Open Water

EXHIBIT 10 - VILLAGE OF PLOVER 2065 SSA AND SOUTHEAST SANITARY COLLECTION SYSTEM

VILLAGE OF PLOVER
WISCONSIN

DONOHUE

N

0 Feet 600

WISCONSIN RIVER

VILLAGE OF PLOVER
WASTEWATER TREATMENT FACILITY

OK-LS

SUB-BASIN RV-LS LOADING POINT

IMPROVEMENT ID: RV-LS
SEE CHAPTER 6 OF MASTER PLAN STUDY
REPORT FOR MORE INFORMATION.

RV-LS

CONNECT TO WWTF-MS
RIM: 1063.24
INV: 1042.46
DEPTH: 20.78 FT

IMPROVEMENT ID: WWTF-MS-2
SEE CHAPTER 6 OF MASTER PLAN STUDY
REPORT FOR MORE INFORMATION.

48-INCH @ 0.046%

SUB-BASIN MG-LS LOADING POINT

MG-LS

15-INCH @ 0.15%

SUB-BASIN SW-15-3 LOADING POINT
RIM: 1070
INV: 1055
DEPTH: 15 FT

CONNECT TO WWTF-MS
RIM: 1073.10
INV: 1051.88
DEPTH: 21.22 FT

SUB-BASIN X-36 LOADING POINT

IMPROVEMENT ID: WWTF-MS-1
SEE CHAPTER 6 OF MASTER PLAN STUDY
REPORT FOR MORE INFORMATION.

RIM: 1072
INV: 1046
DEPTH: 26 FT

CONNECT TO WWTF-MS
RIM: 1073.27
INV: 1054.08
DEPTH: 19.19 FT

48-INCH @ 0.06%

STH 54

18-INCH @ 0.12%

SUB-BASIN SW-18-2 LOADING POINT
RIM: 1071
INV: 1054
DEPTH: 17 FT

PT-LS

RIM: 1071
INV: 1065.5
DEPTH: 5.5 FT

8-INCH @ 0.40%

8-INCH @ 0.40%

15-INCH @ 0.15%

SUB-BASIN PT-LS LOADING POINT

SUB-BASIN SW-8-1 LOADING POINT
RIM: 1072
INV: 1062
DEPTH: 10 FT

SUB-BASIN SW-15-2 LOADING POINT
RIM: 1072
INV: 1057
DEPTH: 15 FT

SUB-BASIN SW-LS-1-8 LOADING POINT
RIM: 1072
INV: 1062
DEPTH: 10 FT

DUAL 10-INCH FM

SW-LS-2

RIM: 1068
INV: 1049.5
DEPTH: 18.5 FT

8-INCH @ 0.40%

12-INCH @ 0.22%

SUB-BASIN SW-12-2 LOADING POINT
RIM: 1071
INV: 1060
DEPTH: 11 FT

CONNECT TO CLS
RIM: 1076.20
INV: 1070.08
DEPTH: 6.12 FT

DUAL 6-INCH FM

8-INCH @ 0.40%

DUAL 4-INCH FM

8-INCH @ 0.40%

8-INCH @ 0.40%

10-INCH @ 0.28%

SW-LS-1

S-LS-2

RIM: 1072
INV: 1062
DEPTH: 10 FT

RIM: 1070
INV: 1062
DEPTH: 8 FT

SUB-BASIN SW-LS-1-10 LOADING POINT
RIM: 1072
INV: 1052
DEPTH: 20 FT

LIFT STATION SW-LS-2
RIM: 1063
LOWEST INCOMING INV: 1035
DEPTH TO LOWEST INV: 28 FT

LIFT STATION SW-LS-1
RIM: 1069
LOWEST INCOMING INV: 1042.50
DEPTH TO LOWEST INV: 26.50 FT

LIFT STATION S-LS-2
RIM: 1078
LOWEST INCOMING INV: 1056
DEPTH TO LOWEST INV: 22 FT

LEGEND

- Proposed Lift Station
- Existing Lift Station
- Proposed Sewer Sub-basin Loading Point
- Proposed Sewer Elevation Point

Proposed Critical Gravity Sewers

- 8-Inch
- 10-Inch
- 12-Inch
- 15-Inch
- 18-Inch
- 21-Inch
- 27-Inch
- 30-Inch
- 48-Inch

Existing Critical Gravity Sewers

- 8-inch
- 10-inch
- 12-inch
- 15-inch
- 18-inch
- 21-inch
- 24-inch
- 27-inch
- 30-inch
- 36-inch

- Proposed Sanitary Force Main
- Existing Sanitary Force Main
- 5 Foot Portage County GIS Elevation Contours
- 2065 Sewer Service Area Boundary
- 2045 Sewer Service Area Boundary
- 2065 Airline Dr. Lift Station Sewer Service Area
- 2065 E-LS-1 Lift Station Sewer Service Area
- 2065 First St. Lift Station Sewer Service Area
- 2065 Hoover Ave. Lift Station Sewer Service Area
- 2065 Mirage Circle Lift Station Sewer Service Area
- 2065 NE-LS-1 Lift Station Sewer Service Area
- 2065 Okray Ave. Lift Station Sewer Service Area
- 2065 Patti Dr. Lift Station Sewer Service Area
- 2065 Roosevelt Dr. Lift Station Sewer Service Area
- 2065 River Dr. Lift Station Sewer Service Area
- 2065 S-LS-1 Lift Station Sewer Service Area
- 2065 S-LS-2 Lift Station Sewer Service Area
- 2065 SE-LS-1 Lift Station Sewer Service Area
- 2065 SE-LS-2 Lift Station Sewer Service Area
- 2065 Springville Pond Lift Station Sewer Service Area
- 2065 SW-LS-1 Lift Station Sewer Service Area
- 2065 SW-LS-2 Lift Station Sewer Service Area
- Parcels
- Open Water

EXHIBIT 11 - VILLAGE OF PLOVER 2065 SSA AND SOUTHWEST SANITARY COLLECTION SYSTEM

6. CAPITAL IMPROVEMENT PLANNING

This Capital Improvement Planning chapter recommends specific system improvements and estimates costs required to provide reliable conveyance capacity for the Village sanitary collection system now and through the foreseeable future. It is based on the condition assessment, capacity analysis, and peak flow projections documented in previous chapters. A comparison of peak flow to lift station and pipe capacities shows various deficiencies in the collection system. This chapter summarizes the deficiencies along with improvements for addressing them. Timelines for implementing the improvements are also shown.

6.1 IMPROVEMENTS RELATED TO CONDITION ASSESSMENT

A condition assessment of six existing lift stations (Okray Avenue, River Drive, Industrial Park, Springville Drive, Hoover Avenue, and Airline Drive) was performed and revealed numerous deficiencies. The condition assessments are discussed in Chapter 2.2 of this Master Plan, and details are documented in Appendix A. Table 2-4 through Table 2-9 contain lists of recommended lift station improvements. The lift stations and projected improvement timelines are summarized in Table 6-1.

Table 6-1: Lift Station Improvements related to Condition Assessments

ID & Location	Deficiency	Improvement	Timeline
ID: RV-LS River Dr. Lift Station	See Appendix A for results of condition assessment.	Install recommended improvements listed in Table 2-5.	Construction planned for 2026.
ID: OK-LS Okray Ave. Lift Station	See Appendix A for results of condition assessment.	Install recommended improvements listed in Table 2-4.	5-10 Years
ID: ID-LS Industrial Park Lift Station	See Appendix A for results of condition assessment.	Install recommended improvements listed in Table 2-6.	10-20 Years (1)
ID: AR-LS Airline Dr. Lift Station	See Appendix A for results of condition assessment.	Install recommended improvements listed in Table 2-9.	10-20 Years
ID: SP-LS Springville Dr. Lift Station	Lift station will be replaced. Condition assessment improvements not needed. See Table 6-3.		
ID: HV-LS Hoover Ave. Lift Station	Hoover Ave. Lift Station requires capacity upgrades in addition to condition assessment improvements. See Table 6-2.		

Note: (1) It's possible that improvements will not be needed if ID-LS flows are consolidated into proposed lift station E-LS-1. If E-LS-1 is not planned for construction in 10 to 20 years then the condition assessment improvements at Industrial Park Lift Station should be installed.

A review of the repair history for the collection system gravity sewers and force mains revealed that all repairs were related to operation and maintenance and not structural deficiencies; therefore, no structural improvements are recommended at this time. However, the oldest gravity sewers and force mains in the Village's system are approximately 50 years old. It is recommended that the Village implement a formal condition assessment plan with objective rating criteria – such as the standards published by the National Association of Sewer Service Companies (NASSCO) – to document the condition of the gravity sewer network and force mains.

Gravity sewer inspection could involve cleaning and televising the pipes and examining the manholes on a regular basis to document any deterioration and assess the rate of deterioration. It is more difficult to assess the condition of the force main pipes as they are relatively inaccessible compared to gravity sewer networks. To inspect the exterior of a force main, the pipe would need to be exposed by excavation. Visual inspection of the interior would require the pipe to be empty and clean. Access points along the force main are necessary to insert inspection equipment into the force main. To date, there have been no breaks of the force main pipes. However, should pipe failure begin to occur, or as the ferrous force mains continue to age, inspection of force mains should be considered. Depending on soil characteristics, the life expectancy of ferrous force mains ranges from 50 to 75 years.

The costs for implementing a Village-run inspection program, including equipment purchases and training, are included in the Capital Improvement Plan.

6.2 IMPROVEMENTS RELATED TO EXISTING PEAK FLOWS

Improvements related to existing peak flows are summarized in Table 6-2.

Table 6-2: Collection System Improvements related to Existing Peak Flows

ID & Location	Deficiency	Improvement	Timeline
ID: OK-LS Okray Ave. Lift Station	Lift Station Firm Capacity = 0.69 cfs Existing Peak Flow based on Pump Runtimes = 0.46 cfs Existing Peak Flow based on Land Use Calculations = 1.05 cfs	If actual peak flows are as low as pump runtime data suggests then no capacity upgrades are needed.	N/A
ID: RV-LS River Dr. Lift Station	Lift Station Firm Capacity = 0.49 cfs Existing Peak Flow based on Pump Runtimes = 0.28 cfs Existing Peak Flow based on Land Use Calculations = 0.70 cfs	If actual peak flows are as low as pump runtime data suggests than no capacity upgrades are needed.	Construction planned for 2026.
ID: SP-LS Springville Dr. Lift Station	Lift Station Firm Capacity = 0.59 cfs Existing Peak Flow based on Pump Runtimes = 0.90 cfs Existing Peak Flow based on Land Use Calculations = 2.27 cfs 2045 Peak Flow based on full Build-Out Land Use Calculations = 4.35 cfs 2065 Peak Flow based on full Build-Out Land Use Calculations = 7.58 cfs	Construct a New Springville Lift Station and force main to provide capacity for predicted year 2045 peak flows. Allow for expansion to convey predicted year 2065 peak flows. Include new exterior generator with automatic transfer switch. Construct new dual 16-inch force mains (one for flow and one for backup). New force mains will discharge to 24-inch sewer at intersection of Washington Ave. and Roosevelt Dr.	0-5 Years

ID & Location	Deficiency	Improvement	Timeline
ID: HV-LS Hoover Ave. Lift Station	Lift Station Firm Capacity = 0.59 cfs Existing Peak Flow based on Pump Runtimes = 0.65 cfs Existing Peak Flow based on Land Use Calculations = 1.00 cfs 2045 Peak Flow based on full Build-Out Land Use Calculations = 1.50 cfs 2065 Peak Flow same as 2045 Peak Flow	Replace pumps to improve lift station capacity to predicted year 2045 peak flow. Install recommended condition assessment improvements listed in Table 2-8.	5-10 Years (This timeline assumes new developments in the Hoover Service Area will be deferred to prioritize other projects. See Section 6.4)

6.3 IMPROVEMENTS RELATED TO 2045 AND 2065 PEAK FLOWS

Improvements related to 2045 and 2065 peak flows are summarized in Table 6-3.

Table 6-3: Collection System Improvements related to 2045 and 2065 Peak Flows

ID & Location	Deficiency at Full 2045 or 2065 Build-Out	Improvement	Timeline
ID: SPS Existing 15-inch gravity sewer from Porter Rd./Bel Aire Dr. to existing Springville Dr. Lift Station	Existing Sewer Capacity = 2.50 cfs Existing Peak Flow = 2.27 cfs 2045 Peak Flow at Full Build-Out = 4.35 cfs 2065 Peak Flow at Full Build-Out = 7.58 cfs	Install new 27-inch relief sewer from Porter Rd./Bel-Aire Dr. intersection to new Springville Dr. Lift Station. Install new 8-inch gravity sewer from existing Springville Dr. Lift Station across Springville Pond to new 27-inch relief sewer.	0-5 Years
ID: WWTF-SS Existing 15-inch gravity sewer in Post Rd. between Lincoln Ave. and Maple Dr.	Existing Sewer Capacity = 2.50 cfs Existing Peak Flow = 1.69 cfs 2045 Peak Flow at Full Build-Out = 7.17 cfs 2065 Peak Flow at Full Build-Out = 11.94 cfs	Install 27-inch parallel relief sewer in open land southeast of the Post Rd./Maple Dr. intersection.	5-10 Years

ID & Location	Deficiency at Full 2045 or 2065 Build-Out	Improvement	Timeline
ID: HVS Hoover Ave. Lift Station Discharge Sewer	Existing 8-inch Sewer Capacity = 0.78 cfs Existing Peak Flow based on Pump Runtimes = 0.65 cfs Existing Peak Flow based on Land Use Calculations = 1.00 cfs 2045 Peak Flow based on full Build-Out Land Use Calculations = 1.50 cfs 2065 Peak Flow same as 2045 Peak Flow	Replace and extend existing 6-inch force main that discharges to 8-inch sewer at Coventry Dr. with a new 8-inch force main that discharges to 15-inch sewer at Porter Rd.	5-10 Years (This timeline assumes new developments in the Hoover Service Area will be deferred to prioritize other projects. See Section 6.4)
ID: LMS Existing 8-inch gravity sewer in Lombard Dr. between I-39 and Hoover Ave.	Existing 8-inch Sewer Capacity = 0.78 cfs Existing Peak Flow = 0.56 cfs 2045 Peak Flow at Full Build-Out = 0.89 cfs 2065 Peak Flow same as 2045 Peak Flow	Replace existing 8-inch gravity sewer with a 10-inch gravity sewer at same locations and elevations.	20+ Years (This timeline assumes new developments in the Hoover Service Area will be deferred to prioritize other projects. See Section 6.4)
ID: LMS Existing 10-inch gravity sewer in Hoover Ave between Lombard Dr. and Hoover Ave. Lift Station	Existing Sewer Capacity = 1.15 cfs Existing Peak Flow = 0.93 cfs 2045 Peak Flow at Full Build-Out = 1.43 cfs 2065 Peak Flow at Full Build-Out = 1.43 cfs	Replace existing 10-inch gravity sewer with a 12-inch gravity sewer at same locations and elevations.	20+ Years (This timeline assumes new developments in the Hoover Service Area will be deferred to prioritize other projects. See Section 6.4)

ID & Location	Deficiency at Full 2045 or 2065 Build-Out	Improvement	Timeline
ID: WWTF-NS-2 Existing 24-inch gravity sewers in Washington Ave. between Roosevelt Dr. and Pine Dr.	Existing 24-inch Sewer Capacity = 6.40 cfs Existing Peak Flow = 3.47 cfs 2045 Peak Flow at Full Build-Out = 5.77 cfs 2065 Peak Flow at Full Build-Out = 9.13 cfs	Replace existing 24-inch gravity sewer with 30-inch gravity sewer at same location and elevation.	20+ Years
ID: WWTF-NS-3 Existing 27-inch gravity sewer in Washington Ave. between Pine Dr. and Vineyard Dr	Existing 27-inch Sewer Capacity = 8.02 cfs Existing Peak Flow = 4.31 cfs 2045 Peak Flow at Full Build-Out = 7.48 cfs 2065 Peak Flow at Full Build-Out = 10.83 cfs	Replace existing 27-inch gravity sewer with 30-inch gravity sewer at same location and elevation.	20+ Years
ID: WWTF-MS-1 Existing 33-inch gravity sewer in Maple Dr. between Post Rd. and Jackson Ave.	Existing 33-inch Sewer Capacity = 12.96 cfs Existing Peak Flow = 5.91 cfs 2045 Peak Flow at Full Build-Out = 15.74 cfs 2065 Peak Flow at Full Build-Out = 24.08 cfs	Replace existing 33-inch gravity sewer with 48-inch gravity sewer at same location and elevation.	20+ Years (This timeline assumes full 2045 build-out will not occur until after 2045. See Section 6.4)
ID: WWTF-MS-2 Existing 36-inch gravity sewer in Maple Dr. and easement from Jackson Ave. to WWTF.	Existing 36-inch Sewer Capacity = 14.31 cfs Existing Peak Flow = 6.63 cfs 2045 Peak Flow at Full Build-Out = 17.59 cfs 2065 Peak Flow at Full Build-Out = 28.21 cfs	Replace existing 36-inch gravity sewer with 48-inch gravity sewer at same location and elevation.	20+ Years (This timeline assumes full 2045 build-out will not occur until after 2045. See Section 6.4)

ID & Location	Deficiency at Full 2045 or 2065 Build-Out	Improvement	Timeline
ID: RO-LS Roosevelt Dr. Lift Station	Lift Station Firm Capacity = 0.33 cfs Existing Peak Flow based on Pump Runtimes = 0.19 cfs Existing Peak Flow based on Land Use Calculations = 0.21 cfs 2045 Peak Flow at Full Build-Out = 0.68 cfs 2065 Peak Flow same as 2045 Peak Flow	Replace pumps to increase capacity of lift station. Extend force main to discharge in 24-inch sewer at intersection of Roosevelt Dr. and Washington Ave.	20+ Years (This timeline assumes new developments in the Roosevelt Service Area will not occur for more than 20 years, see Section 6.4)

6.4 TIMELINE DISCUSSIONS AND ADDITIONAL RECOMMENDATIONS

This section provides further discussion and reasoning behind the SP-LS and HV-LS improvement timelines shown in Table 6-2 and the improvement timelines shown in Table 6-3, along with additional recommendations and considerations for those projects.

6.4.1 SPRINGVILLE DRIVE LIFT STATION AND RELATED SEWERS

The Springville Dr. Lift Station and influent sewer improvements (IDs SPS and SP-LS) are given the highest priority and are prioritized over the Hoover Ave. Lift Station improvements (IDs HV-LS and HVS) because the Springville Dr. Lift Station is closer to exceeding its total capacity. The existing Springville Dr. Lift Station and the 15-inch influent sewer are also serving as bottlenecks for new development in the entire northeastern part of the Village, whereas the Hoover Ave. Lift Station restricts development in a much smaller area and the area has less development pressure. The locations of improvements SPS and SP-LS are shown in Figure 6-1 and Exhibit 9.

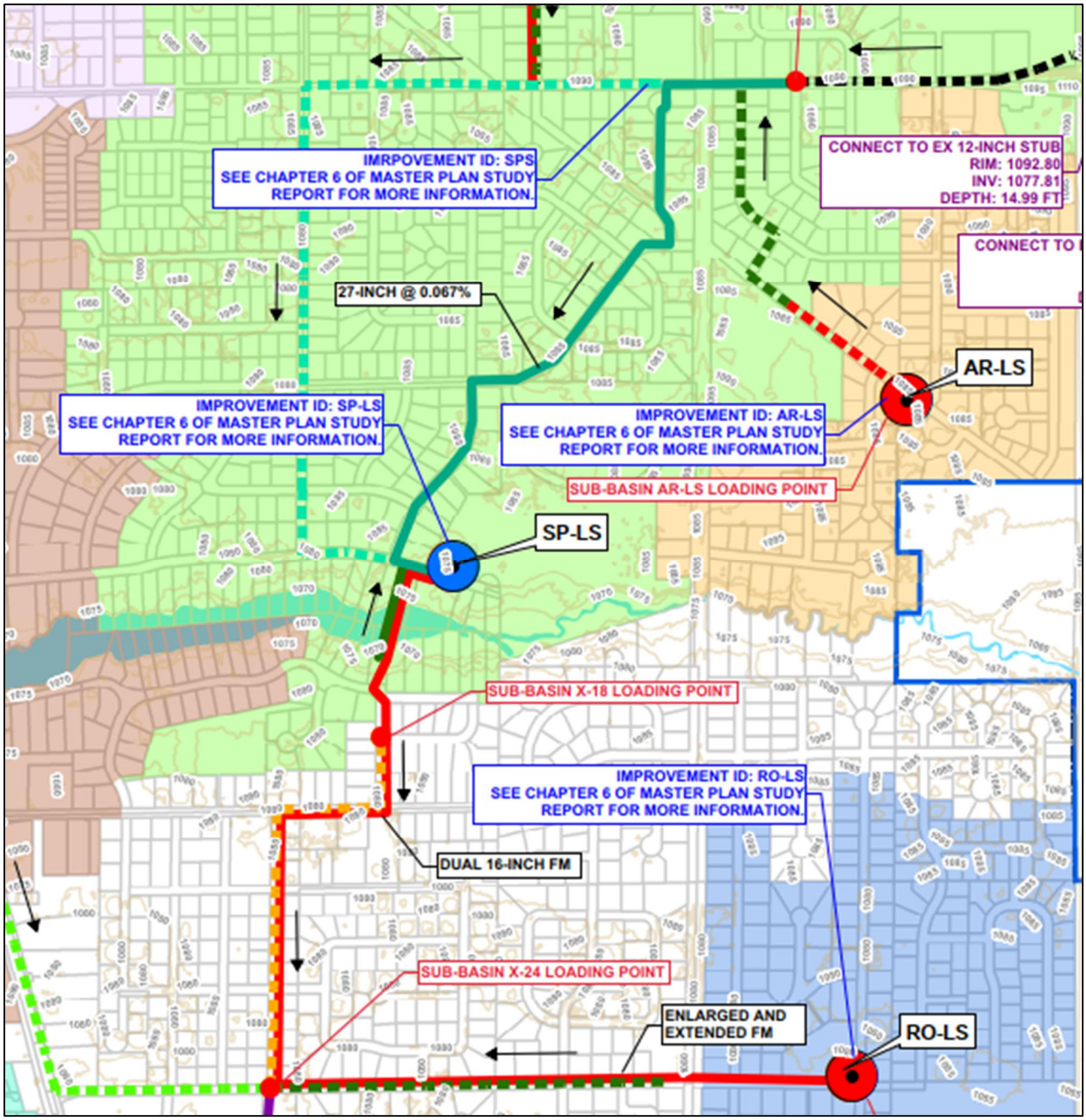


Figure 6-1: Location of improvements SPS and SP-LS.

A detailed study should be performed to review alternatives for the New Springville Lift Station before a design is initiated. The SPS and SP-LS improvements described in Table 6-3 represent only one possible alternative for addressing their capacity limitations. There are several other possible alternatives that should considered, including, but not limited to:

- Preferred location of the new lift station.
- Type and configuration of the new lift station.

- Number, size, and discharge location(s) for the new lift station force main(s).
- Route, depth, and material for the new influent gravity sewer.

An analysis of the impacts the new Springville Dr. Lift Station would have on downstream gravity sewers should be included in the new lift station study, as the exact discharge location of the new lift station's force main(s) will have a major influence on where and when downstream gravity sewer improvements will be needed. Sewers impacted by the Springville Dr. Lift Station include the 24-, 27-, 33-, and 36-inch sewers in Table 6-3 (IDs WWTF-NS-2, WWTF NS-3, WWTF-MS-1, and WWTF-MS-2). It is assumed that improvements to these gravity sewers will not be required for more than 20 years due to new development occurring at a slower pace than suggested by the 2045 and 2065 flow projection calculations. These downstream improvements were therefore given a low priority. Development should be monitored as part of the regular Master Plan update process to assess if the improvement timeline needs to be tightened. The locations of improvements WWTF-NS-2, WWTF-NS-3, and WWTF-MS-1 are shown in Figure 6-2 and Exhibit 10. The location of improvement WWTF-MS-2 is shown in Figure 6-3 and Exhibit 11.

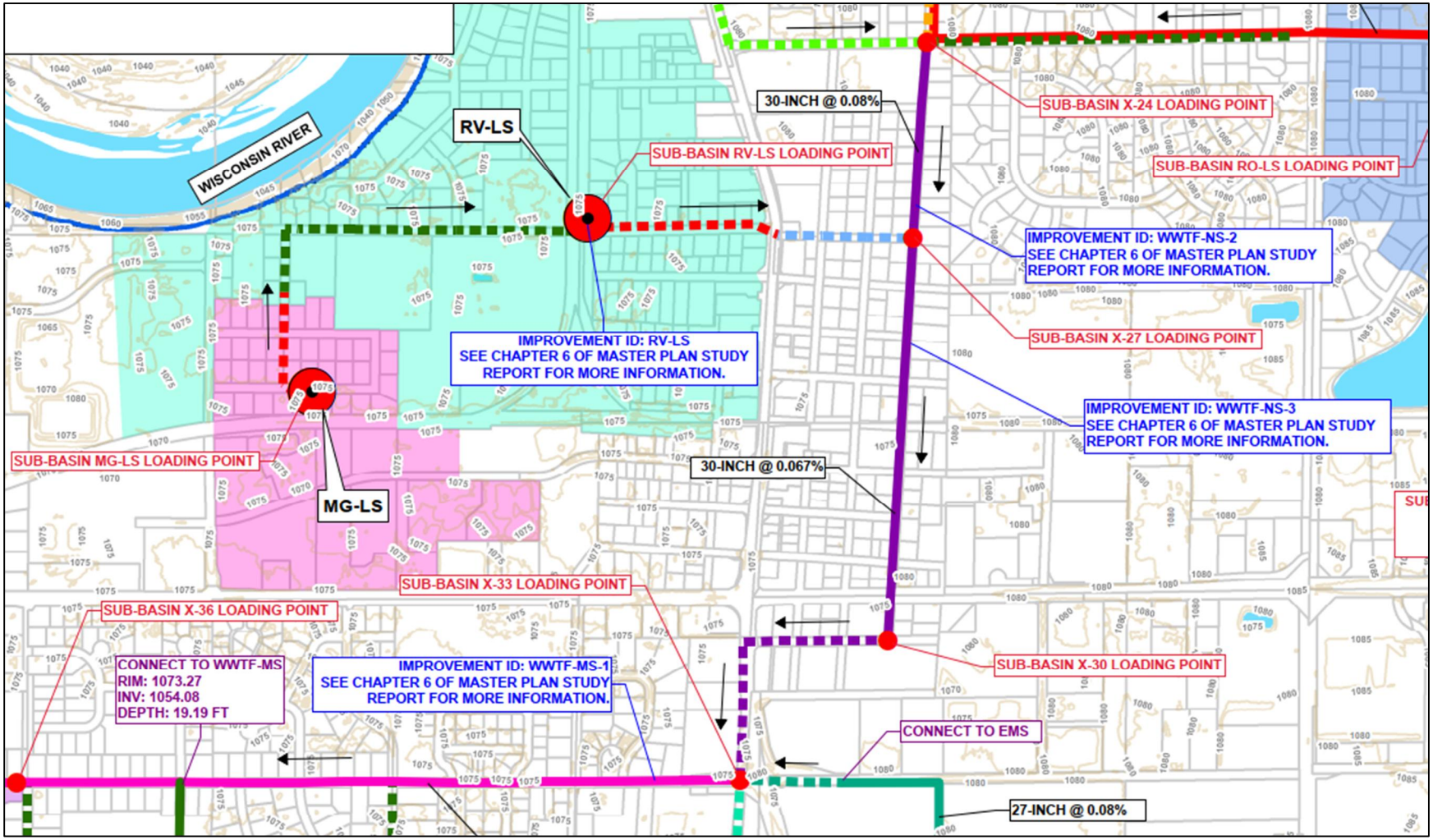


Figure 6-2: Location of improvements WWTF-NS-2, WWTF-NS-3, and WWTF-MS-1.

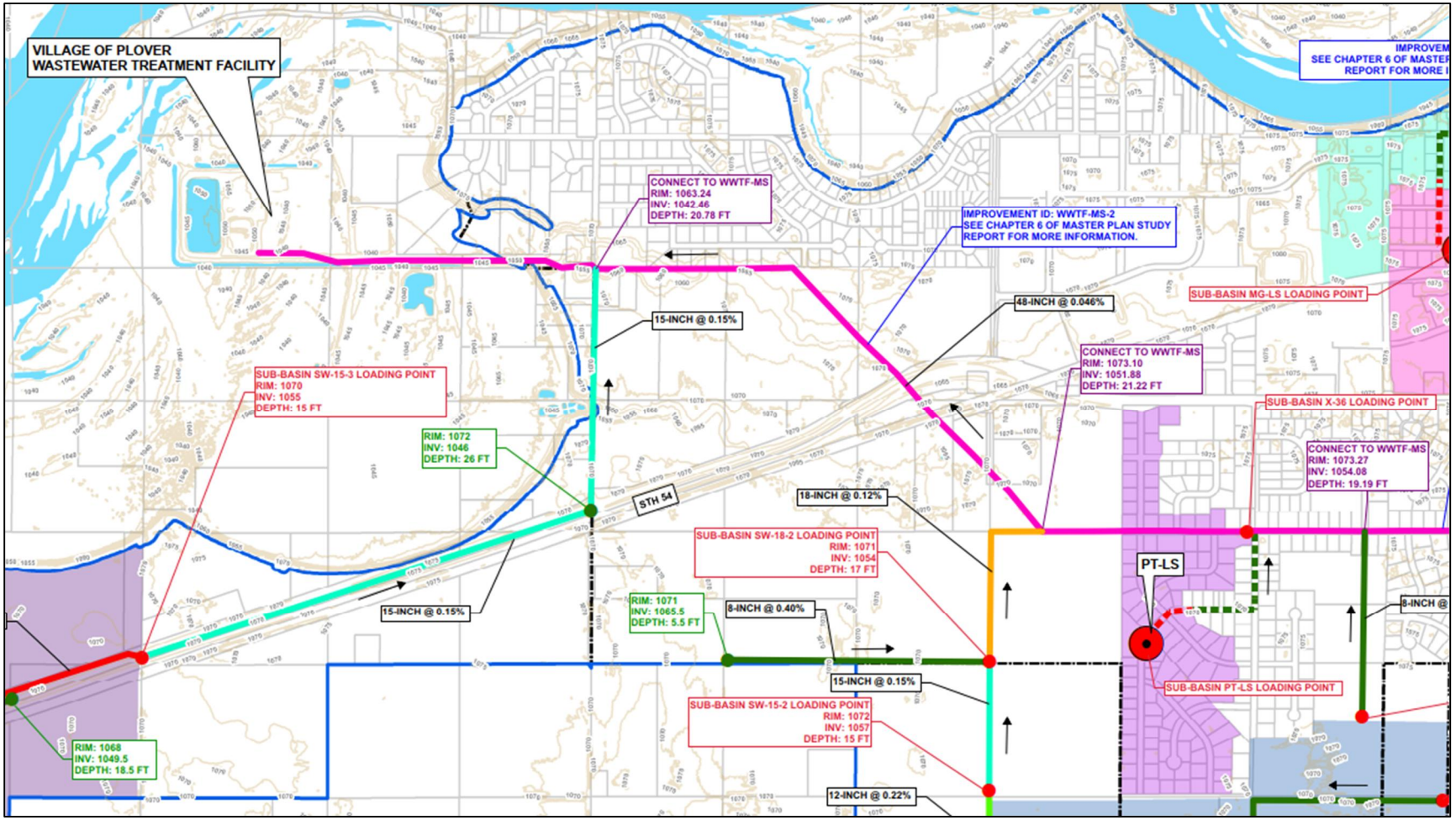


Figure 6-3: Location of improvement WWTF-MS-2.

The New Springville Drive Lift Station and related improvements shown in Table 6-3 were selected for inclusion in this report to provide a cost baseline and because they optimize the use of existing gravity sewer infrastructure and minimize the length of the new force main(s). It is not known if these improvements as shown are the most effective from both an economic and non-economic perspective. Reviewing multiple alternatives to determine the most effective improvements was beyond the scope of this Master Plan study and should be addressed as part of the recommended New Springville Drive Lift Station study.

6.4.2 POST ROAD GRAVITY SEWER

This improvement (ID WWTF-SS) is given near-term priority and is centered around the segment of 15-inch sewer in Post Rd. between Lincoln Ave. and Maple Dr. The location of the improvement is shown in Figure 6-4 and Exhibit 10.

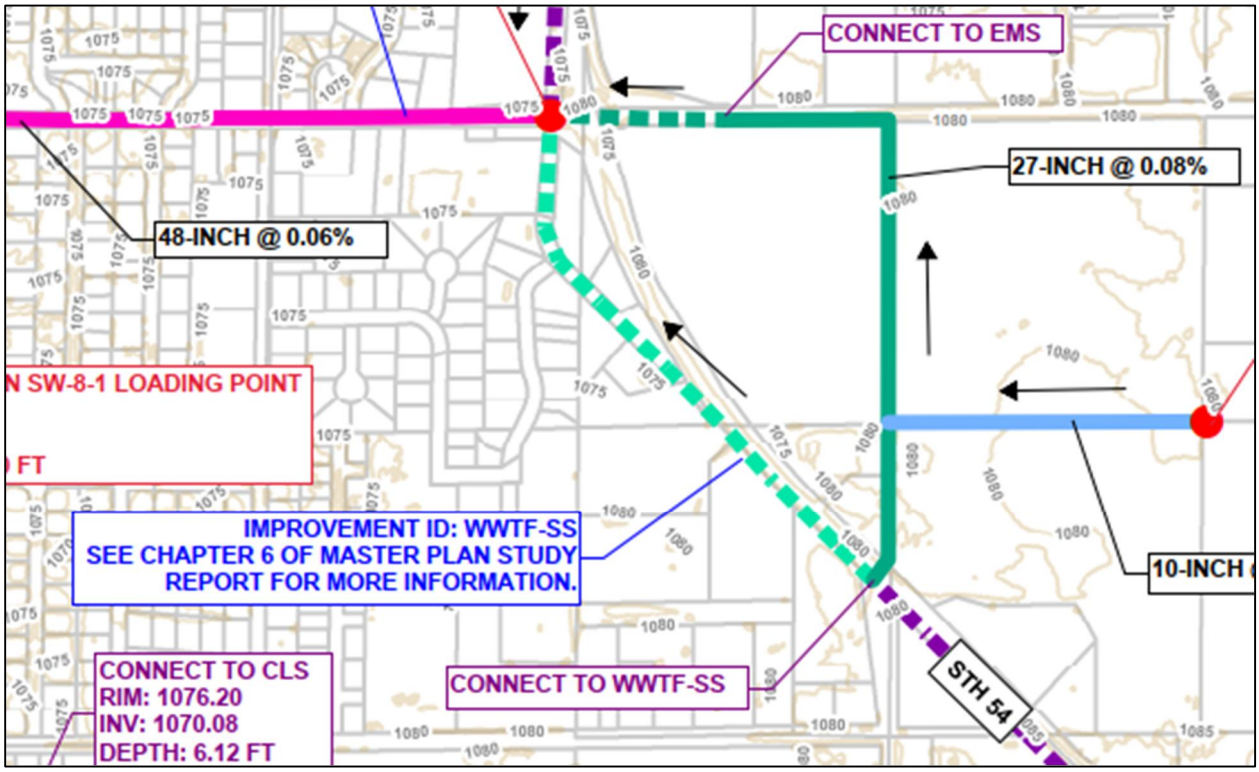


Figure 6-4: Location of improvement WWTF-SS.

It is assumed that southeast development activity will necessitate installing this improvement sometime in the 5-to-10-year window, however, the timeline for constructing this improvement will depend on the pace of the development and should be monitored on a regular basis. The Village is aware of this potential bottleneck and intends to address it by installing a parallel 27-inch relief gravity sewer in the vacant land east of Post Rd. Flow projection calculations suggest the existing 15-inch sewer has about 0.80 cfs of remaining capacity.

6.4.3 HOOVER AVENUE LIFT STATION AND RELATED SEWERS

The improvement timeline for the Hoover Avenue Lift Station and its discharge sewer (IDs HV-LS and HVS) depends on service area development. Table 6-2 and Table 6-3 schedule these improvements for the 5-to-10 year window. This timing assumes that large-flow developments in the service area will be deferred to prioritize the more urgent SPS and SP-LS improvements. The HV-LS and HVS improvements will need to be implemented earlier than suggested in Table 6-2 and Table 6-3 if large-flow developments are allowed to occur.

Capacity improvements to the 8-inch sewer in Lombard Dr. and the 10-inch sewer in Hoover Ave. (ID LMS) are scheduled to occur more than 20 years from now. Village staff indicated the anticipated development in the Hoover Ave. Lift Station service area is unlikely to stress these sewers to the levels suggested by the projected flow calculations, as the area will likely not be fully developed within the 20-year timeframe. Consequently, capacity improvements for these sewers were given a lower priority.

The locations of improvements HV-LS, HVS, and LMS are shown in Figure 6-5 and Exhibit 9.

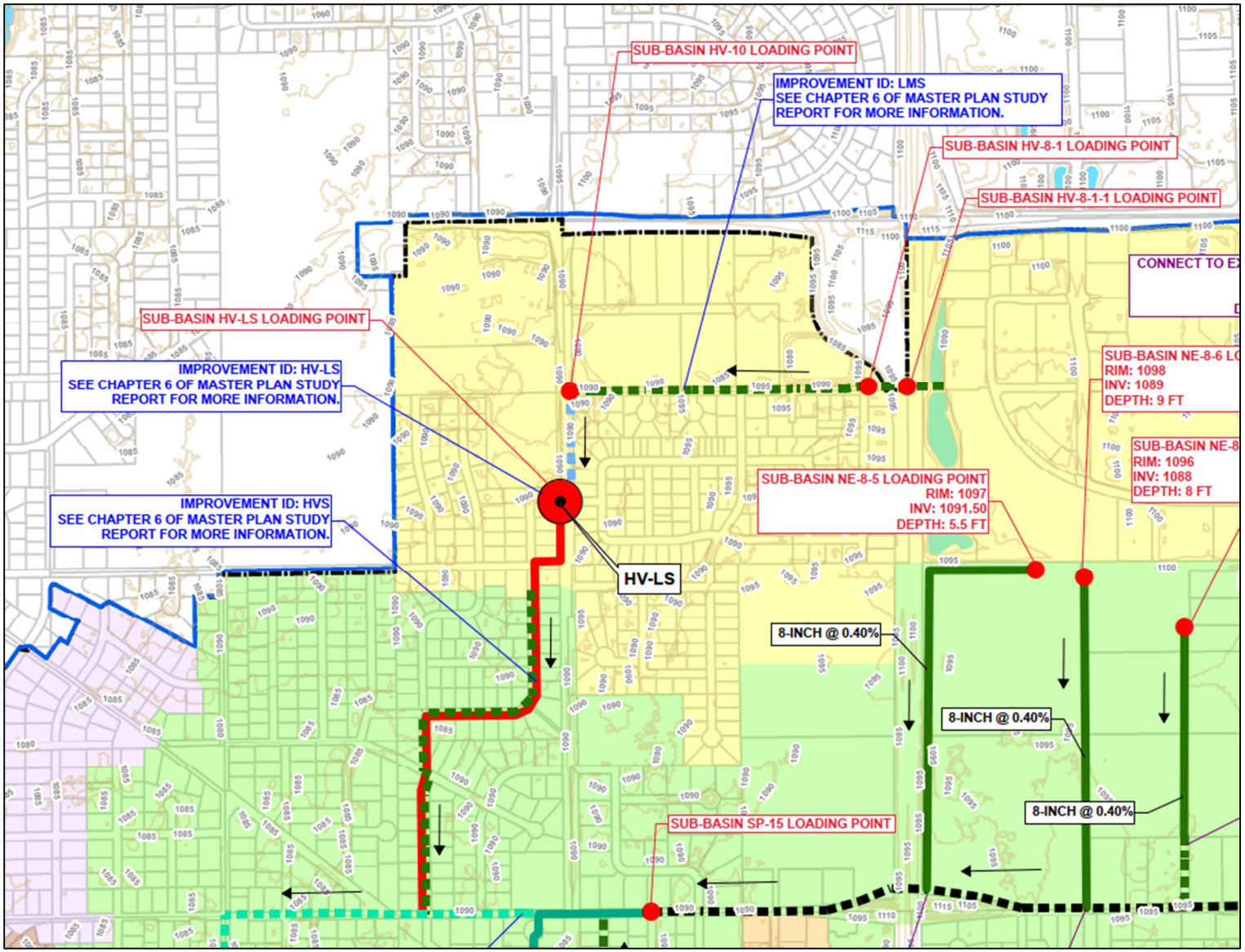


Figure 6-5: Location of improvements HV-LS, HVS, and LMS.

6.4.4 ROOSEVELT DRIVE LIFT STATION

Capacity improvements at the Roosevelt Dr. Lift Station (ID RO-LS) are only necessary if the remaining vacant land in the service area is developed. Such development would require a significant number of multi-family structures to exceed capacity as suggested by peak flow projections. Village staff do not currently anticipate this type of development occurring within the 20-year planning period. The location of improvement RO-LS is shown in Figure 6-6 and Exhibit 10.

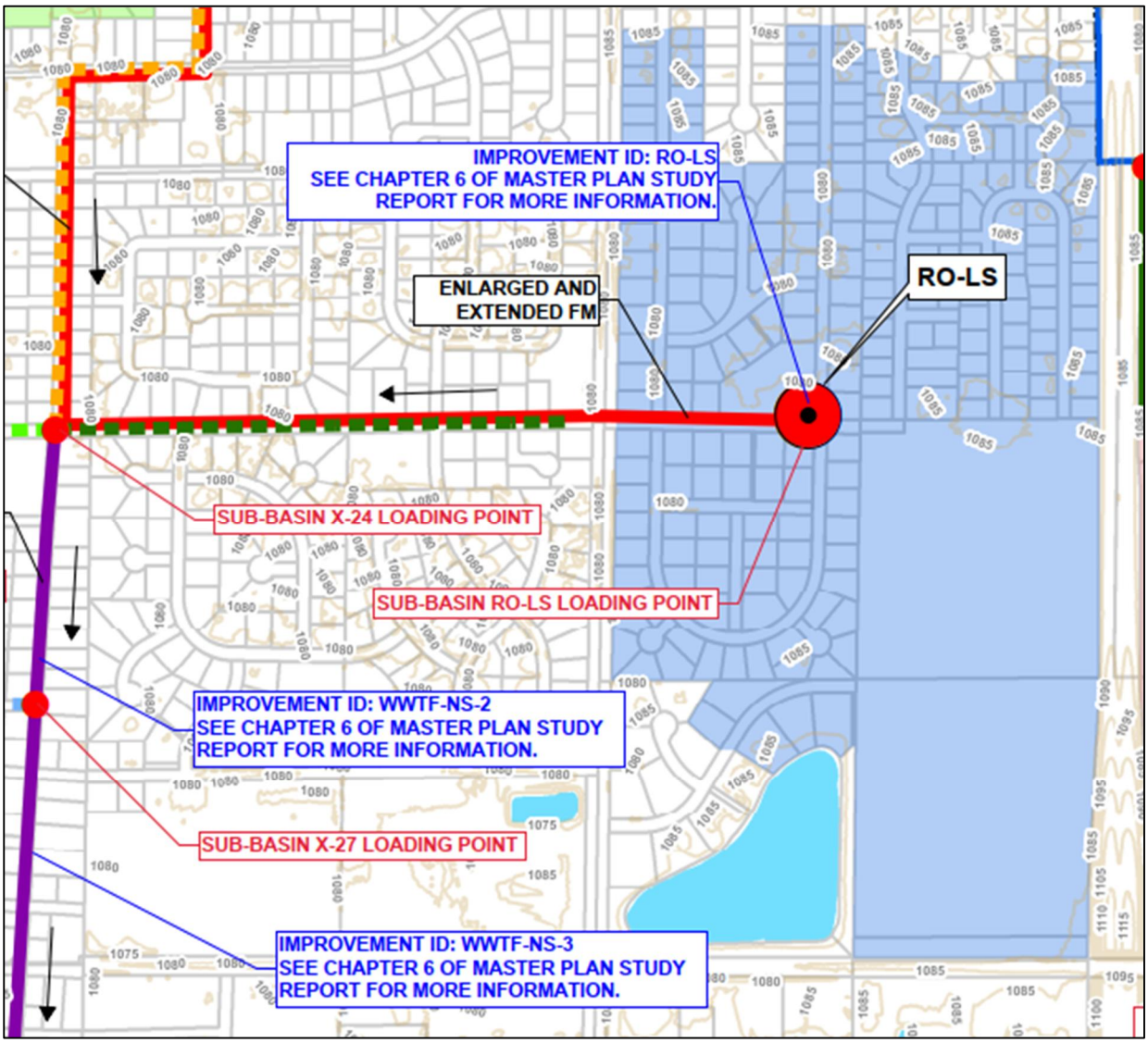


Figure 6-6: Location of improvement RO-LS.

6.5 20-YEAR CAPITAL IMPROVEMENT PLAN

Table 6-4 presents a 20-Year Capital Improvement Plan based on the improvement prioritizations and anticipated implementation timelines previously presented. Opinions of Probable Construction Costs are provided for all improvements that have implementation timelines within the next 20 years. Cost opinions for long-term improvements greater than 20 years from present should be developed as part of the next Master Plan update.

Costs provided below are adequate for project planning. The actual design and construction costs for the improvements may vary from the planning level costs. Some factors that could impact final costs include:

- When the improvements are constructed and the increase in future construction costs.
- Unforeseen changes in Local, State, and National economic conditions.
- Changes that could be encountered while performing detailed improvement studies and designs.

Appendix C – Detailed Capital Improvement Plan Cost Opinions contains a detailed breakdown of costs for each improvement.

Table 6-4: 20-Year Capital Improvement Plan

Improvement Timeline	Improvement Description	Cost Opinion (2026 Dollars)
Short-Term (0 to 5 Years)	Sewer televising equipment purchases and staff training.	$100,000
	Springville Drive Lift Station Study – Alternatives Analysis	$100,000
	Improvement ID: RV-LS New River Drive Lift Station	$1,556,000
	Improvement IDs: SP-LS, SPS New Springville Drive Lift Station, Force main, and Influent Gravity Sewers	$10,348,000
Near Term (5 to 10 Years)	Improvement IDs: HV-LS, HVS Hoover Lift Station Capacity Improvements, Condition Improvements, and Force main Extension	$2,023,000
	Improvement ID: WWTF-SS Post Rd. Parallel Relief Sewer	$1,570,000
	Improvement ID: OK-LS Okray Ave. Lift Station Condition Improvements	$150,000
Long Term (10 to 20 Years)	Improvement ID: ID-LS Industrial Park Lift Station Condition Improvements	$355,000
	Improvement ID: AR-LS Airline Drive Lift Station Condition Improvements	$449,000

Appendix A

Lift Station Assessment Report

Village of Plover
2400 Post Road | Plover, WI 54467

Village of Plover
Lift Station Assessment Report

December 2025 – FINAL

Prepared by:

Donohue & Associates, Inc.
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Donohue Project No.: 14598

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Appendix D – Springville Lift Station Assessment

Appendix E – Hoover Lift Station Assessment

Appendix F – Airline Lift Station Assessment

EXECUTIVE SUMMARY

1.1 INTRODUCTION

The Village of Plover is located along the Wisconsin River in central Portage County, directly adjacent to the Village of Whiting and City of Stevens Point. Plover is situated 16 miles northeast of Wisconsin Rapids via State Trunk Highway (STH) 54, and 37 miles south of Wausau via Interstate Highway 39. Portions of US Highway 39, Business Highway 51, and County Roads (Cty Rds) B and HH, and R are also located within the Village boundaries. The Village of Plover is anticipated to experience population growth, and an increase in service flows, thus making the assessment of the existing pumping capacities and the condition of the Village's lift stations increasingly important.

The Village of Plover owns and operates numerous sanitary sewer lift stations throughout the Village. These stations are used to collect sanitary sewage at a localized low points and then pump the sewage, via forcemain, to a gravity sewer system that ultimately flows to the Village's wastewater treatment plant. The lift stations fluctuate in terms of physical size, capacity, age and type (building vs. no building, dry well pumps vs. submersible pumps, etc.).

The Village is interested in evaluating six lift stations for condition to determine the needs and costs for potential upgrades to improve reliability, redundancy, safety, operations, and other site-specific elements. Each lift station has its own specific needs. A comprehensive evaluation of each lift station is required to identify the specific needs.

In June of 2025, a team of engineers, along with City staff, visited the following lift stations to assess condition.

- Okray Lift Station
- River Drive Lift Station
- Industrial Park Lift Station
- Springville Drive Lift Station
- Hoover Lift Station
- Airline Lift Station

1.2 LIFT STATION ASSESSMENT

The lift station assessments document the current conditions of each lift station and indicates the recommended upgrades for each specific lift station. A summary of the recommended upgrades for each lift station is listed below. The full lift station assessment for each lift station is included in an Appendix to this report.

Cost estimates for lift station improvements is not included in this report. The intent of the recommended upgrades is to identify and provide clarification on the work needed at each lift station so an accurate cost estimate can be generated.

OKRAY LIFT STATION

Okray Lift Station was originally constructed in 1978, then upgraded in 2002 with an external valve vault and a service change from 230 volt to 460 volt 3-phase power, followed by a controls upgrade in 2013. The lift station is configured as a submersible pump wet well design. Okray Lift Station consists of two 6'-0" precast concrete manholes, one serving as the wet well and the other as a valve vault. Within the wet well, there are two submersible pumps each sized for 150 gallons per minute (gpm) at 20 feet of total dead head (TDH). Pump operation is controlled by a submersible level transducer. Each pump's discharge piping is routed to the valve vault where it passes through a 6-inch check and plug valve before teeing together via a cross fitting and connecting to the forcemain. This cross fitting allows for bypass pumping in the event that the lift station needs to be taken offline. The forcemain was installed in 1978 and is made of 8-inch ductile iron. The forcemain extends a total length of 2,120 feet and runs south to Plover Springs Drive, then east to Post Road, then south to manhole D517. The control panel and electrical equipment for this lift station are located above grade on the west side of Okray Avenue and receive 460 volt 3-phase power. No on-site emergency generator is installed at this location; however, a connection point is provided for a portable backup generator. The Okray Lift Station Assessment (Appendix A) details the observations made by the City and Donohue during the site visit.

RIVER DRIVE LIFT STATION

River Drive Lift Station was originally constructed in 1974, then underwent renovations in 1996 to install variable frequency drives (VFD) for the pumps, in 2005 to replace the control panels and in 2013 to upgrade the lift station controls. The lift station is configured as a wet well/dry well design. It consists of a below grade 8'-0" metal "can" dry well and an 8'-0" precast concrete cylindrical wet well. Within the wet well there are two independent 6-inch flared elbow suction lines. Each pump is VFD controlled and sized for 150 gallons per minute at 20 feet of total dead head. Pump operation is controlled by a submersible level transducer. Within the dry well, each pump discharges to a 4-inch check and plug valve before teeing together via a 4-inch by 6-inch wye fitting and connecting to the forcemain. The forcemain was installed in 1974 and is made of 6-inch ductile iron. The forcemain extends a total length of 1,447 feet and runs south to River Road, then east to post Road, discharging into manhole D401 in Post Road. The control panel and electrical equipment for this lift station are located above grade next to the dry well and receive 240 volt 3-phase power. No on-site emergency generator is installed at this location; however, a connection point is provided for a portable backup generator. The River Drive Lift Station Assessment (Appendix B) details the observations made by the City and Donohue during the site visit.

INDUSTRIAL PARK LIFT STATION

Industrial Park Lift Station was originally constructed in 1988, then underwent renovations in 2000 to upgrade the lift station controls. The lift station is configured as a submersible pump wet well design. Industrial Park Lift Station consists of two 6'-0" precast concrete manholes, one serving as the wet well and the other as a valve vault. Within the wet well, there are two submersible pumps each sized for 400 gallons per minute at 29 feet of total dead head. Pump operation is controlled by submersible ball floats. Each pump's discharge piping is routed to the valve vault where it passes through an 8-inch check and plug valve before teeing together via an 8-inch wye fitting and connecting to the forcemain. The forcemain was installed in 1988 and is made of 8-inch ductile iron. The forcemain extends a total length of 595 feet and runs south from the lift station to manhole D469 in Twin Towers Drive. The control panel and electrical equipment for this lift station are located above grade in-between the wet well and dry

well and receive 480 volt 3-phase power. No on-site emergency generator is installed at this location; however, a connection point is provided for a portable backup generator. The Industrial Park Lift Station Assessment (Appendix C) details the observations made by the City and Donohue during the site visit.

SPRINGVILLE LIFT STATION

Springville Lift Station was originally constructed in 1978, then underwent renovations in 2002 to install an external valve vault with new discharge piping and in 2013 to upgrade the lift station controls. The lift station is configured as a submersible pump wet well design. Springville Lift Station consists of two 6'-0" precast concrete manholes, one serving as the wet well and the other as a valve vault. Within the wet well, there are two submersible pumps each sized for 380 gallons per minute at 18 feet of total dead head. Pump operation is controlled by submersible ball floats. Each pump's discharge piping is routed to the valve vault where it passes through a 6-inch check and plug valve before teeing together via a cross fitting and connecting to the forcemain. The forcemain was installed in 1978 and is made of 8-inch ductile iron. The forcemain extends a total length of 533 feet and runs south on Springville Drive and discharges into manhole D033. The control panel, electrical equipment, and onsite emergency back-up generator are located within the above grade building adjacent to the wet well and valve vault. The lift station receives 240 volt 3-phase power. The Springville Lift Station Assessment (Appendix D) details the observations made by the City and Donohue during the site visit.

HOOVER LIFT STATION

Hoover Lift Station was originally constructed in 1978, then underwent renovations in 2002 to install an external valve vault with new discharge piping and in 2013 to upgrade the lift station controls. The lift station is configured as a submersible pump wet well design. It consists of two 6'-0" precast concrete manholes, one serving as the wet well and the other as a valve vault. Within the wet well, there are two submersible pumps each sized for 260 gallons per minute at 34 feet of total dead head. Pump operation is controlled by submersible ball floats. Each pump's discharge piping routes to the valve vault where it passes through a 6-inch check and plug valve before teeing together via a cross fitting and connecting to the 6-inch forcemain. This cross fitting allows for bypass pumping in the event that the lift station needs to be taken offline. The forcemain was installed in 1978 and is made of 6-inch ductile iron. The forcemain extends a total length of 913 feet and runs south from the lift station to Elm Street, then west to Coventry Drive, then south to manhole C156. The control panel and electrical equipment for this lift station are located above grade on the west side of Hoover Avenue and receive 230 volt 3-phase power. No on-site emergency generator is installed at this location; however, a connection point is provided for a portable backup generator. The Hoover Lift Station Assessment (Appendix E) details the observations made by the City and Donohue during the site visit.

AIRLINE LIFT STATION

Airline Lift Station was originally constructed in 1978 as a temporary lift station, then underwent renovations in 1990 to replace the forcemain, in 2013 to upgrade the lift station controls and in 2020 to replace the cover and top section of the wet well. The lift station is configured as a submersible pump wet well design with no dedicated valve vault. It consists of one 5'-0" precast concrete manhole, serving as the wet well. Within the wet well, there are two submersible pumps each controlled by variable frequency drives and sized for 200 gallons per minute at 24 feet of total dead head. Pump operation is controlled by submersible ball floats. Each pump's discharge piping travels vertically where it passes through a 4-inch check and plug valve before teeing together via a tee fitting and connecting to the 4-

inch forcemain. The forcemain was replaced in 1990 and is made of 4-inch PVC. The forcemain extends a total length of 1,015 feet and runs northwest along Airline Drive to manhole C178. The control panel and electrical equipment for this lift station are located above grade next to the valve vault and wet well and receive 230 volt 1-phase power. No on-site emergency generator is installed at this location; however, a connection point is provided for a portable backup generator. The Airline Lift Station Assessment (Appendix F) details the observations made by the City and Donohue during the site visit.

Appendix A – Okray Lift Station Assessment

Okray Lift Station

Facility Description

Okray Lift Station is located three hundred feet north of Springville Drive on Okray Avenue.



Figure 1: Okray Lift Station

Okray Lift Station was originally constructed in 1978, then upgraded in 2002 with an external valve vault and a service change from 230 volt to 460 volt 3-phase power, followed by a controls upgrade in 2013. The lift station is configured as a submersible pump wet well design. Okray Lift Station consists of two 6'-0" precast concrete manholes, one serving as the wet well and the other as a valve vault. Within the wet well, there are two submersible pumps each sized for 150 gallons per minute (gpm) at 20 feet of total dead head (TDH). Pump operation is controlled by a submersible level transducer. Each pump's discharge piping is routed to the valve vault where it passes through a 6-inch check and plug valve before teeing together via a cross fitting and connecting to the forcemain. This cross fitting allows for bypass pumping in the event that the lift station needs to be taken offline. The forcemain was installed in 1978 and is made of 8-inch ductile iron. The forcemain extends a total length of 2,120 feet and runs south to Plover Springs Drive, then east to Post Road, then south to manhole D517. The control panel and electrical equipment for this lift station are located above grade on the west side of Okray Avenue and receive 460 volt 3-phase power. No on-site emergency generator is installed at this location; however, a connection point is provided for a portable backup generator.

Site Conditions:



Figure 2: Okray Lift Station (Roadside View)



Figure 3: Okray Lift Station Site

Pumps, Piping, & Valves:

Pump 1 was replaced in 2004, and Pump 2 was replaced in 2015. Given the age of Pump 1 and the typical service life of 20-25 years for a submersible pump, replacement is recommended. While Pump 2 does not need to be replaced immediately, it should be planned for in the future. The pump discharge piping appears to be in fair condition. The plug valves show exterior corrosion; however, due to their ductile iron construction, they are expected to have a remaining service life of approximately 25 years. The check valves also appear to be in fair condition.



Figure 4: Okray Lift Station Wet Well

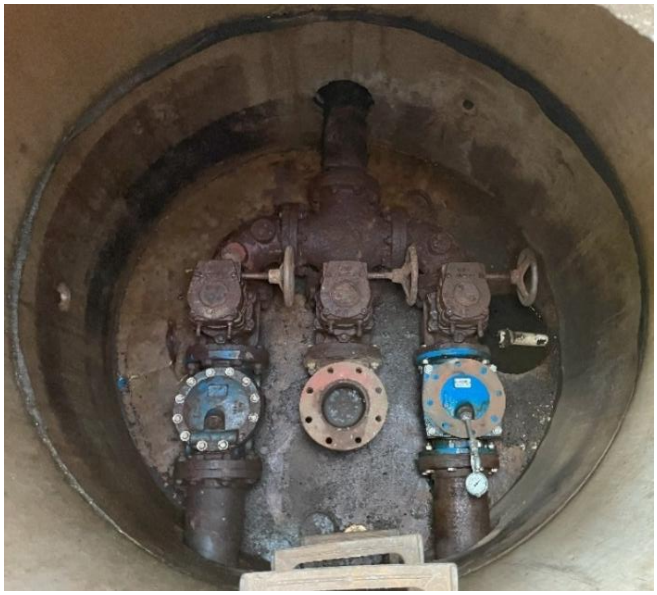


Figure 5: Okray Lift Station Valve Vault

Electrical:

The pump station receives a 460 volt, 3-phase electric service from the electric utility. The incoming electric service terminates at a main circuit breaker inside the panel which feeds a transfer switch. A portable generator connection receptacle is connected to the transfer switch in the panel. This set up provides the ability to power the station off the electric utility, or a portable generator.

The electrical equipment appears to be in fair condition.



Figure 6: Okray Lift Station Electrical Service

Controls:

Lift station controls include an Allen-Bradley MicroLogix 1100 PLC for automatic control connected to a PanelView Plus 600 operator interface unit. The lift station communicates with the City SCADA system via a 4RF Aprisa SR+ radio and a Yagi antenna. A submersible transducer provides the primary mode of level detection with a system of backup floats taking over should the transducer fail. A UPS is installed in the control panel, but it is unknown whether the batteries have been replaced. UPS batteries should be replaced every 5 years. The UPS load side cable is damaged and needs replacement.

The intrinsically safe relay serves the ball floats, but there is no intrinsically safe relay for the submersible transducer. Intrinsically safe circuits are not installed per code (NEC Article 504).

It is unknown whether the conduits originating in the wet well have seal-offs prior to splice box as required by code.

The control components appear to be in fair condition.



Figure 7: Okray Lift Station Control Panel



Figure 8: Okray Lift Station Control Panel (Internals)

Structural Conditions:

The lift station has no above grade structure or building. As previously mentioned, the wet well and valve vault consist of two 6'-0" precast concrete manholes. The valve vault can be accessed by a manhole cover and a cast in place ladder while access to the wet well is facilitated by two 2'-6" by 4'-0" hatches. The current hatches do not contain safety grating. While not required by code, safety grating would provide additional fall protection when the hatches are open. The control panel is exhibiting surface level rust on the lower interior. The valve enclosure and wet well structure appear to be in good condition.



Figure 9: Okray Lift Station Wet Well Manhole



Figure 10: Okray Lift Station Control Panel Slab

HVAC/Plumbing:

This site does not have a building, so there are no HVAC components to assess.

Plumbing includes a 2-inch gravity drain line from the valve vault sump to the wet well.

Emergency Generator:

No on-site emergency backup generators are associated with this lift station; however, it is fitted with an emergency power connection point. In the event of a power outage, a portable generator can be connected directly to the control panel to maintain lift station operation.

Desired Improvements

The following deficiencies were noted by the Village and Donohue during the site visit:

1. Replace Pump 1.
2. Confirm the age of the UPS battery and replace it if it is more than five years old.
3. Replace UPS load side cable.
4. Install intrinsically safe relay for level transducer.
5. Confirm whether the conduits originating in the wet well have seal-offs prior to splice box as required by code.
6. Install safety grating for hatch openings.

Appendix B – River Drive Lift Station Assessment

River Drive Lift Station

Facility Description
River Drive Station is located on the east side of Okray Avenue at the River Drive intersection.



Figure 1: River Drive Lift Station

River Drive Lift Station was originally constructed in 1974, then underwent renovations in 1996 to install variable frequency drives (VFD) for the pumps, in 2005 to replace the control panels and in 2013 to upgrade the lift station controls. The lift station is configured as a wet well/dry well design. It consists of a below grade 8'-0" metal "can" dry well and an 8'-0" precast concrete cylindrical wet well. Within the wet well there are two independent 6-inch flared elbow suction lines. Each pump is VFD controlled and sized for 150 gallons per minute (gpm) at 20 feet of total dead head (TDH). Pump operation is controlled by a submersible level transducer. Within the dry well, each pump discharges to a 4-inch check and plug valve before teeing together via a 4-inch by 6-inch wye fitting and connecting to the forcemain. The forcemain was installed in 1974 and is made of 6-inch ductile iron. The forcemain extends a total length of 1,447 feet and runs south to River Road, then east to post Road, discharging into manhole D401 in Post Road. The control panel and electrical equipment for this lift station are located above grade next to the dry well and receive 240 volt 3-phase power. No on-site emergency generator is installed at this location; however, a connection point is provided for a portable backup generator.

Site Conditions:



Figure 2: River Drive Lift Station Site



Figure 3: River Drive Lift Station

Pumps, Piping, & Valves:

During the onsite visit, the condition of the pumps, piping and valves were not directly observed. Given the wet well dry well configuration, the piping is assumed to be in fair condition. Both pumps 1 and 2 were replaced in 2010. Given the age of pumps and the typical service life of 20-25 years for a submersible pump, their replacement isn't necessary; however, it should be planned for in the future.



Figure 4: River Drive Lift Station Dry Well Access

Electrical:

The lift station receives a 240 volt, 3-phase electric service from the electric utility. The incoming electric service terminates at a main circuit breaker inside the panel which feeds a transfer switch. A portable generator connection receptacle is connected to the transfer switch in the panel. This set up provides the ability to power the station off the electric utility, or a portable generator. It should be noted that the utility provider may not support the existing service size if future service updates are made. As such, upgrading the electrical service to 480 volt 3-phase should be considered if major renovations are planned/expected.

The electrical equipment appears to be in fair condition.



Figure 5: River Drive Lift Station Electrical Service

Controls:

Lift station controls include an Allen-Bradley MicroLogix 1400 PLC for automatic control connected to a PanelView Plus 600 operator interface unit. The lift station communicates with the City SCADA system via a 4RF Aprisa SR+ radio and a Yagi antenna. A submersible transducer provides the primary mode of level detection with a backup system taking over should the primary transducer fail. A UPS is installed in the control panel, but it is unknown whether the batteries have been replaced. UPS batteries should be replaced every 5 years.

Control components are generally in good condition.



Figure 6: River Drive Lift Station Control Panel



Figure 7: River Drive Lift Station Control Panel (Internals)

Structural Conditions:

The lift station has no above grade structure or building. As previously mentioned, the dry well is constructed from an 8'-0" metal can structure while the wet well is made from an 8'-0" precast concrete cylindrical structure. Access to the dry well is facilitated via a manhole hatch and access to the wet well is facilitated by a 2'-0" by 2'-0" hatch and ladder. The caged ladder is no longer recommended by code for fall protection. Instead, a fall arrest system consisting of a vertical rail and harness should be used.

The dry well structure's interior coating appears to be in poor condition, the condition of the metal itself is unknown. The concrete structure of the wet well appears to be in fair condition.

During the onsite assessment, Village staff expressed interest in eliminating the dry well due to the uncertainty surrounding its condition as well as the safety risks associated with it's confined-space access. Converting the facility to a submersible wet well configuration is feasible; however, implementation would require substantial modifications. These include altering the existing wet well to accommodate guiderails, coring the structure for new discharge piping, and installing a new valve vault manhole. As the existing dry well would already be abandoned, it could be partially demolished to allow for the valve vault to be installed in its place at a higher elevation. Alternatively, an entirely new submersible lift station could be constructed as well. This alternative would be significantly easier to sequence however would require all new controls, and a new wet well.



Figure 8: River Drive Lift Station Wet Well

HVAC/Plumbing:

The wet well has a dedicated air intake blower to supply the hazardous space with fresh air when occupied. The condition of this blower and ventilation pipe is unknown but assumed to be in poor condition due to the corrosive environment and age of the equipment.

The dry well has a dedicated exhaust blower and a passive air intake. Both the temperature and humidity within the space are regulated via a dedicated heater and dehumidifier. The condition of these is unknown but are assumed to be in poor condition due to the age of the equipment.

Plumbing includes a 2-inch gravity drain line from the valve vault sump to the wet well.

Emergency Generator:

No on-site emergency backup generators are associated with this lift station; however, it is fitted with an emergency power connection point. In the event of a power outage, a portable generator can be connected directly to the control panel to maintain lift station operation.

Desired Improvements

The following deficiencies were noted by the Village and Donohue during the site visit:

1. Consider converting lift station to a wet well submersible configuration.
    a. Partially demolish the existing dry well structure.
    b. Install new valve vault manhole.
    c. Modify existing wet well to accommodate submersible pumps.
    d. Install two new submersible pumps.
    e. Replace all pump discharge piping and associated valves.
    f. Consider upgrading to 480 volt 3-phase power.
2. Consider complete replacement of existing lift station with a submersible station.
    a. Construct entirely new submersible lift station wet well & dry well.
    b. Install all new controls, and equipment.
    c. Install new discharge piping and tap into existing forcemain.
    d. Consider upgrading to 480 volt 3-phase power.
3. Consider upgrading to 480 volt 3-phase power if major renovations are planned/expected.
4. Confirm the age of the UPS battery and replace it if it is more than five years old.
5. Remove caged ladder and replace with fall arrest system.
6. Replace wet well air intake blower.
7. Replace dry well exhaust blower and dehumidifier.

Appendix C – Industrial Park Lift Station Assessment

Industrial Park Lift Station

Facility Description

Industrial Park Lift Station is located on the west side of Twin Towers drive, 500 feet north of the railroad tracks.



Figure 1: Industrial Park Lift Station

Industrial Park Lift Station was originally constructed in 1988, then underwent renovations in 2000 to upgrade the lift station controls. The lift station is configured as a submersible pump wet well design. Industrial Park Lift Station consists of two 6'-0" precast concrete manholes, one serving as the wet well and the other as a valve vault. Within the wet well, there are two submersible pumps each sized for 400 gallons per minute (gpm) at 29 feet of total dead head (TDH). Pump operation is controlled by submersible ball floats. Each pump's discharge piping is routed to the valve vault where it passes through an 8-inch check and plug valve before teeing together via an 8-inch wye fitting and connecting to the forcemain. The forcemain was installed in 1988 and is made of 8-inch ductile iron. The forcemain extends a total length of 595 feet and runs south from the lift station to manhole D469 in Twin Towers Drive. The control panel and electrical equipment for this lift station are located above grade in-between the wet well and dry well and receive 480 volt 3-phase power. No on-site emergency generator is installed at this location; however, a connection point is provided for a portable backup generator.

Site Conditions:



Figure 2: Industrial Park Lift Station Site



Figure 3: Industrial Park Lift Station

Pumps, Piping, & Valves:

Both pumps were replaced in 1995. Given the age of the pumps and the typical service life of 20-25 years for a submersible pump, replacement is recommended. The discharge piping and valves appear to be in poor condition and should be planned for replacement in the future. During the onsite visit, the valve vault was found to be completely submerged. It is recommended that a sump be installed with a 2-inch drain line that connects to the wet well. It is recommended that the wye fitting be replaced with an 8-inch cross tee fitting equipped with a plug valve to standardize this lift station's bypass pumping capabilities with the other stations.



Figure 4: Industrial Park Lift Station Valve Vault Manhole



Figure 5: Industrial Park Lift Station Wet Well Manhole

Electrical:

The lift station receives a 480 volt, 3-phase electric service from the electric utility. The incoming electric service terminates at a main circuit breaker inside the panel which feeds a transfer switch. A portable generator connection receptacle is connected to the transfer switch in the panel. This set up provides the ability to power the station off the electric utility, or a portable generator.

The electrical equipment appears to be in fair condition.



Figure 6: Industrial Park Lift Station Electrical Service

Controls:

Lift station controls include an Allen-Bradley MicroLogix 1100 PLC for automatic control. There is no operator interface unit associated with this lift station. The lift station communicates with the City SCADA system via a 4RF Aprisa SR+ radio and a Yagi antenna. Submersible floats provide the primary mode of level detection for the lift station. A UPS is installed in the control panel, but it is unknown whether the batteries have been replaced. UPS batteries should be replaced every 5 years.

Wet well instrumentation is not wired with intrinsically safe barriers and does not comply with the NEC. It does not appear that conduits entering the wet well have seal-offs which does not comply with the NEC. It appears the wet well vent is within 5 feet of the control panel does not comply with the NEC.

Control components are generally in fair to poor condition.



Figure 7: Industrial Park Lift Station Control Panel

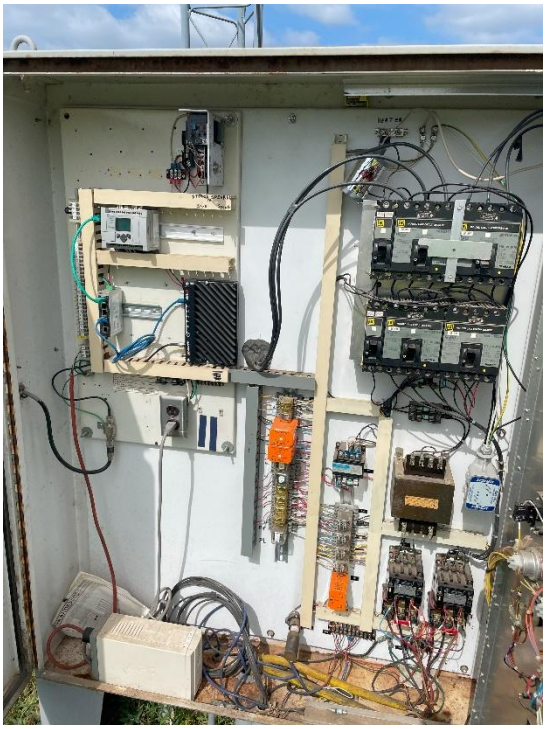


Figure 8: Industrial Park Lift Station Control Panel (Internals)

Structural Conditions:

The lift station has no above grade structure or building. As previously mentioned, both the wet well and valve vault are made from an 8'-0" precast concrete cylindrical structure. Access to the wet well and valve vault is facilitated via two 3'-0" by 5'-0" hatches. The current hatches do not contain safety grating. While not required by code, safety grating would provide additional fall protection when the hatches are open.

The concrete structure of the wet well and valve vault appears to be in fair condition.



Figure 9: Industrial Park Lift Station Wet Well

HVAC/Plumbing:

This site does not have a building, so there are no HVAC components to assess.

As previously mentioned, it is recommended to move the existing wet well vent away from the control panel to a minimum distance of 5 feet.

In addition, it is recommended to install a 2-inch drain line from the valve enclosure to the wet well.

Emergency Generator:

No on-site emergency backup generators are associated with this lift station; however, it is fitted with an emergency power connection point. In the event of a power outage, a portable generator can be connected directly to the control panel to maintain lift station operation.

Desired Improvements

The following deficiencies were noted by the Village and Donohue during the site visit:

1. Replace existing pumps.
2. Replace existing piping plug valves & check valves.
3. Install a cross tee in place of the existing Y fitting that connects each pump discharge to the forcemain, followed by a plug valve.
4. Install a sump with a 2-inch drain line.
5. Confirm the age of the UPS battery and replace it if it is more than five years old.
6. Install intrinsically safe barriers for wet well instrumentation.
7. Confirm whether the conduits originating in the wet well have seal-offs prior to splice box as required by code.
8. Move wet well vent pipe exhaust a minimum of 5 feet away from control panel.
9. Install safety grating for hatch openings.

Appendix D – Springville Lift Station Assessment

Springville Lift Station

Facility Description

Springville Lift Station is located on 2400 Springville Drive at the Heatherton Lane intersection.



Figure 1: Springville Lift Station

Springville Lift Station was originally constructed in 1978, then underwent renovations in 2002 to install an external valve vault with new discharge piping and in 2013 to upgrade the lift station controls. The lift station is configured as a submersible pump wet well design. Springville Lift Station consists of two 6'-0" precast concrete manholes, one serving as the wet well and the other as a valve vault. Within the wet well, there are two submersible pumps each sized for 380 gallons per minute (gpm) at 18 feet of total dead head (TDH). Pump operation is controlled by submersible ball floats. Each pump's discharge piping is routed to the valve vault where it passes through a 6-inch check and plug valve before teeing together via a cross fitting and connecting to the forcemain. The forcemain was installed in 1978 and is made of 8-inch ductile iron. The forcemain extends a total length of 533 feet and runs south on Springville Drive and discharges into manhole D033. The control panel, electrical equipment, and onsite emergency back-up generator are located within the above grade building adjacent to the wet well and valve vault. The lift station receives 240 volt 3-phase power.

Site Conditions:



Figure 2: Springville Lift Station Site



Figure 3: Springville Lift Station

Pumps, Piping, & Valves:

Pump 1 was replaced in 2025, and Pump 2 was replaced in 2020. Given the age of pumps, they are assumed to be in good condition. The pump discharge piping appears to be in fair condition. The plug valves show some exterior corrosion; however, due to their ductile iron construction, they are expected to have a remaining service life of approximately 25 years. The check valves also appear to be in fair condition.



Figure 4: Springville Lift Station Valve Vault Manhole



Figure 5: Springville Lift Station Wet Well Manhole

Electrical:

The lift station receives a 240 volt, 3-phase electric service from the electric utility. The incoming electric service terminates at a main circuit breaker inside the building which feeds an automatic transfer switch which in turn feeds the panel. An emergency back-up generator is connected to the transfer switch in the panel. This set up provides the ability to power the station off the electric utility, or the onsite generator. It should be noted that the utility provider may not support the existing service size if future service updates are made. As such, upgrading the electrical service to 480 volt 3-phase should be considered if major renovations are planned/expected.

The electrical equipment appears to be in fair condition.



Figure 6: Industrial Park Lift Station Electrical Service

Controls:

Lift station controls include an Allen-Bradley MicroLogix 1100 PLC for automatic control. There is no operator interface unit associated with this lift station. The lift station communicates with the City SCADA system via a 4RF Aprisa SR+ radio and a Yagi antenna. Ball floats provide the only mode of level detection for the lift station. The intrinsically safe relay serves the ball floats but are not installed per code (NEC Article 504). A UPS is installed in the control panel, but it is unknown whether the batteries have been replaced. UPS batteries should be replaced every 5 years.

Control components are generally in good condition.



Figure 7: Springville Lift Station Control Panel

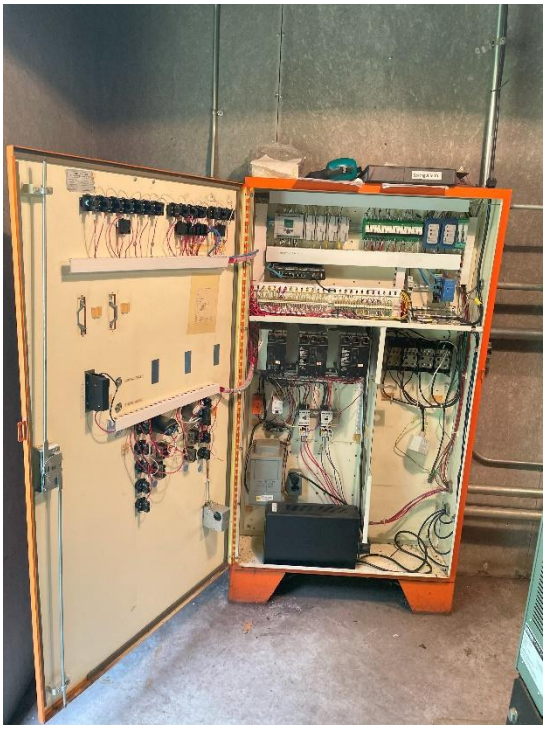


Figure 8: Springville Lift Station Control Panel (Internals)

Structural Conditions:

Both the lift station building's walls and roof appear to be in poor condition and are recommended for replacement. As previously mentioned, the wet well and valve vault are constructed from two 6'-0" precast concrete cylindrical structure. Access to the valve vault is facilitated via a manhole hatch and access to the wet well is facilitated by a 2'-6" by 4'-0" hatch. The current hatches do not contain safety grating. While not required by code, safety grating would provide additional fall protection when the hatches are open.

Both the valve vault and wet well's structure appear to be in fair condition.



Figure 9: Springville Lift Station Wet Well

HVAC/Plumbing:

Plumbing includes a 2-inch gravity drain line from the valve vault sump to the wet well.

Heating within the building is provided by an electric unit heater. The space is ventilated during generator operation by the generator radiator fan drawing in air through a passive air intake controlled by an automatic damper. It is recommended to add a dedicated exhaust fan to provide additional cooling after the generator has shut down.

All components seem to be in good working order with no identifiable code deficiencies.

Emergency Generator:

The generator is a 45 kW Kohler diesel engine. It appears to be in fair condition.



Figure 10: Springville Lift Station Emergency Backup Generator

Desired Improvements

The following deficiencies were noted by the Village and Donohue during the site visit:

1. Replace generator building roof.
2. Replace generator building exterior wall covering.
3. Consider upgrading to 480 volt 3-phase power if major renovations are planned/expected.
4. Confirm the age of the UPS battery and replace it if it is more than five years old.
5. Reinstall intrinsically safe relay for wet well instrumentation per code.
6. Install safety grating for hatch openings.
7. Install a dedicated exhaust fan for additional cooling for after generator usage.

Appendix E – Hoover Lift Station Assessment

Hoover Lift Station

Facility Description

Hoover Lift Station is located in a multi-use pedestrian trail on Hoover Avenue, about 500 ft. north of Elm Drive.



Figure 1: Hoover Lift Station

Hoover Lift Station was originally constructed in 1978, then underwent renovations in 2002 to install an external valve vault with new discharge piping and in 2013 to upgrade the lift station controls. The lift station is configured as a submersible pump wet well design. It consists of two 6'-0" precast concrete manholes, one serving as the wet well and the other as a valve vault. Within the wet well, there are two submersible pumps each sized for 260 gallons per minute (gpm) at 34 feet of total dead head (TDH). Pump operation is controlled by submersible ball floats. Each pump's discharge piping routes to the valve vault where it passes through a 6-inch check and plug valve before teeing together via a cross fitting and connecting to the 6-inch forcemain. This cross fitting allows for bypass pumping in the event that the lift station needs to be taken offline. The forcemain was installed in 1978 and is made of 6-inch ductile iron. The forcemain extends a total length of 913 feet and runs south from the lift station to Elm Street, then west to Coventry Drive, then south to manhole C156. The control panel and electrical equipment for this lift station are located above grade on the west side of Hoover Avenue and receive 230 volt 3-phase power. No on-site emergency generator is installed at this location; however, a connection point is provided for a portable backup generator.

Site Conditions:



Figure 2: Hoover Lift Station Site



Figure 3: Hoover Lift Station

Pumps, Piping, & Valves:

Pump 1 was replaced in 2019, and Pump 2 was replaced in 2020. Given the age of pumps, they are assumed to be in good condition. The pump discharge piping appears to be in fair condition. The plug valves show exterior corrosion; however, due to their ductile iron construction, they are expected to have a remaining service life of approximately 25 years. The check valves also appear to be in fair condition.



Figure 4: Hoover Lift Station Valve Vault Manhole



Figure 5: Hoover Lift Station Wet Well Manhole

Electrical:

The lift station receives a 230 volt, 3-phase electric service from the electric utility. The incoming electric service terminates at a main circuit breaker inside the panel which feeds a transfer switch. A portable generator connection receptacle is connected to the transfer switch in the panel. This set up provides the ability to power the station off the electric utility, or a portable generator. It should be noted that the utility provider may not support the existing service size if future service updates are made. As such, upgrading the electrical service to 480 volt 3-phase should be considered if major renovations are planned/expected.

The electrical equipment appears to be in fair condition.



Figure 6: Hoover Lift Station Electrical Service

Controls:

Lift station controls include an Allen-Bradley MicroLogix 1400 PLC for automatic control. There is no operator interface unit associated with this lift station. The lift station communicates with the City SCADA system via a 4RF Aprisa SR+ radio and a Yagi antenna. Ball floats provide the primary mode of level detection for the lift station. The intrinsically safe relay serves the ball floats but are not installed per code (NEC Article 504). A UPS is installed in the control panel, but it is unknown whether the batteries have been replaced. UPS batteries should be replaced every 5 years. It is unknown whether the conduits entering the wet well have seal-offs as required by the NEC.

Control components are generally in good condition.



Figure 7: Hoover Lift Station Control Panel

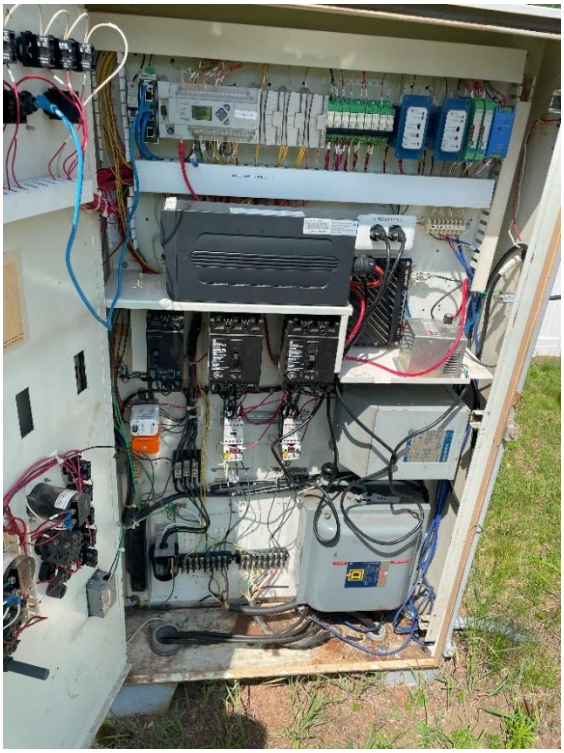


Figure 8: Hoover Lift Station Control Panel (Internals)

Structural Conditions:

The lift station has no above grade structure or building. As previously mentioned, the wet well and valve vault consist of two 6'-0" precast concrete manholes. The valve vault can be accessed by a manhole cover and a cast in place ladder while access to the wet well is facilitated by two 2'-6" by 4'-0" hatches. The current hatches do not contain safety grating. While not required by code, safety grating would provide additional fall protection when the hatches are open.

The valve enclosure and wet well appear to be in good structural condition.



Figure 9: Hoover Lift Station Wet Well

HVAC/Plumbing:

This site does not have a building, so there are no HVAC components to assess.

Plumbing includes a 2-inch gravity drain line from the valve vault sump to the wet well.

Emergency Generator:

No on-site emergency backup generators are associated with this lift station; however, it is fitted with an emergency power connection point. In the event of a power outage, a portable generator can be connected directly to the control panel to maintain lift station operation.

Desired Improvements

The following deficiencies were noted by the Village and Donohue during the site visit:

1. Consider upgrading to 480 volt 3-phase power if major renovations are planned/expected.
2. Reinstall intrinsically safe relay for wet well instrumentation per code.

3. Confirm the age of the UPS battery and replace it if it is more than five years old.
4. Confirm whether the conduits originating in the wet well have seal-offs prior to splice box as required by code.
5. Install safety grating for hatch openings.

Appendix F – Airline Lift Station Assessment

Airline Lift Station

Facility Description

Airline Lift Station is located on an easement at 1371 Airline Drive.



Figure 1: Airline Lift Station

Airline Lift Station was originally constructed in 1978 as a temporary lift station, then underwent renovations in 1990 to replace the forcemain, in 2013 to upgrade the lift station controls and in 2020 to replace the cover and top section of the wet well. The lift station is configured as a submersible pump wet well design with no dedicated valve vault. It consists of one 5'-0" precast concrete manhole, serving as the wet well. Within the wet well, there are two submersible pumps each controlled by variable frequency drives (VFD) and sized for 200 gallons per minute at 24 feet of total dead head (TDH). Pump operation is controlled by submersible ball floats. Each pump's discharge piping travels vertically where it passes through a 4-inch check and plug valve before teeing together via a tee fitting and connecting to the 4-inch forcemain. The forcemain was replaced in 1990 and is made of 4-inch PVC. The forcemain extends a total length of 1,015 feet and runs northwest along Airline Drive to manhole C178. The control panel and electrical equipment for this lift station are located above grade next to the valve vault and wet well and receive 230 volt 1-phase power. No on-site emergency generator is installed at this location; however, a connection point is provided for a portable backup generator.

Site Conditions:



Figure 2: Airline Lift Station Site

Pumps, Piping, & Valves:

During the onsite visit, the condition of the pumps, piping and valves were not directly observed. Both pumps were replaced in 1995. Given the age of the pumps and the typical service life of 20-25 years for a submersible pump, replacement is recommended. Given the station's configuration and the corrosive environment in which the valves are located, it is assumed that the valves are in poor condition and should also be replaced. A long-term solution to address these concerns would be the installation of a 6'-0" precast concrete manhole to serve as a dedicated valve vault. This configuration would improve accessibility and personnel safety when the valves need to be serviced. As part of this upgrade, all valves and discharge piping should be replaced along with installing a bypass pumping connection.



Figure 3: Airline Lift Station Valve Vault Manhole

Electrical:

The lift station receives a 230 volt, 1-phase electric service from the electric utility. The incoming electric service terminates at a main circuit breaker inside the panel which feeds a transfer switch. A portable generator connection receptacle is connected to the transfer switch in the panel. This set up provides the ability to power the station off the electric utility, or a portable generator. It should be noted that the utility provider may not support the existing service size if future service updates are made. As such, upgrading the electrical service to 480 volt 3-phase should be considered if major renovations are planned/expected.



Figure 4: Airline Lift Station Electrical Service

Controls:

Lift station controls include an Allen-Bradley MicroLogix 1100 PLC for automatic control. There is no operator interface unit associated with this lift station. The lift station communicates with the City SCADA system via a 4RF Aprisa SR+ radio and a Yagi antenna. Ball floats provide the only mode of level detection for the lift station. The floats are not protected by intrinsically safe barriers which is in violation of the NEC. A UPS is installed in the control panel, but it is unknown whether the batteries have been replaced. UPS batteries should be replaced every 5 years.

Control components are generally in good condition.



Figure 5: Airline Lift Station Control Panel



Figure 6: Airline Lift Station Control Panel (Internals)

Structural Conditions:

The lift station has no above grade structure or building. As previously mentioned, the wet well consists of a 5'-0" precast concrete manhole. The wet well can be accessed by two 2'-6" by 4'-0" hatches. The current hatches do not contain safety grating. While not required by code, safety grating would provide additional fall protection when the hatches are open.

The wet well appears to be in good structural condition.

HVAC/Plumbing:

This site does not have a building, so there are no HVAC or pluming components to assess.

Emergency Generator:

No on-site emergency backup generators are associated with this lift station.

Desired Improvements

The following deficiencies were noted by the Village and Donohue during the site visit:

1. Replace existing pumps.
2. Replace existing valves.
3. Consider installing 6'-0" precast concrete manhole to serve as a dedicated valve vault.
    a. Install new pumps, valves, and discharge piping with a bypass pumping connection.
    b. Consider upgrading to 480 volt 3-phase power.
4. Consider upgrading to 480 volt 3-phase power if major renovations are planned/expected.
5. Confirm the age of the UPS battery and replace it if it is more than five years old.
6. Install intrinsically safe barriers for wet well instrumentation per code.
7. Install safety grating for hatch openings.

Appendix B

Industrial Survey Responses

Plover Wastewater Utility
4496 Coolidge Avenue
Plover, WI 54467
Phone (715) 345-5259

Wastewater Treatment Facility Plan
Industrial Survey

Business Name_Monogram Foods_____ Contact Name_Andrew Green_____
Address___300 Moore Road_____ Phone___715-459-6107_____
City__Plover_____ Survey Completed Date_____22 Aug 2025_____
Zip Code____54467_____ Completed By Andrew Green_____

Product manufactured or service performed:_Frozen Appetizers_____

Existing Conditions

1) Number of employees____250_____ Operating Days_____260_____ Operating Shifts_3_____

2) Is water used for manufacturing and/or service? Yes (X) No ( ) (Please see your records) average gallons per day

3) What is the wastewater discharge volume to the sanitary sewer? _____65,000___ average gallons per day

4) Is process wastewater discharged to the sanitary sewer? Yes (X) No ( )
_____65,000_____ average gallons per day ___115,000_____maximum gallons per day
Process wastewater is from manufacturing and/or service provided. It does not include domestic usage such as bathrooms and employee facilities.

5) Does your product contain phosphorus (food industry, beverage industry, etc.)? Yes ( ) No (X)

6) Do you use any substances containing phosphorus in your production and cleaning activities? Yes (X) No ( )
These substances may be detergents, cleaning agents cooling water additives etc.
If yes, please provide a list of all the substances containing phosphorus and the amount used per month in pounds.

Phosphorus Containing Compound	**Process Used in**	**Amount Used per Month (pounds)**
Acid sanitizer LS8	Sanitation	12.7 Lb of phosphorus
Bright Shine LMR102	Sanitation	8 lbs of phosphorus
Bright Shinw 8 LMR103	Sanitation	12 lbs of phosphorus
Whistle Klean LCC105	Sanitation	10.8 lbs of phosphorus

7) For the above list, are you aware of any substitute chemicals, raw materials, or process changes that could be used or implemented to reduce the amount of phosphorus discharged to the sanitary sewer system? Yes ( ) No (X)
If yes, please describe_____

8) Are you aware of any substances used in your production or cleaning that contains PFAS/PFOS/PFOA compounds? If so, please list

Future Growth

9) Do you anticipate any increases in employment, production or wastewater discharge for the next 10 and 20 years? Yes ( ) No (X)
Please describe_____Would assume yes but no plans at this time_____

10) If you answered Yes to 9, please estimate projected percent increases in wastewater discharge for the next 10 and 20 years.

	10 Years	20 Years
Wastewater discharge increase	__Unknown_____%	__Unknown_____%

11) Do you expect any changes in raw materials, chemicals, or products for the next 10 and 20 years? Yes ( ) No (X)
Please describe_____Would assume yes but no plans at this time_____

12) Are you planning any water conservation or wastewater minimization activities? Yes ( ) No (X)
Please describe_____No plans at this time_____

13) Are you planning any pretreatment infrastructure modifications or updates or new system installations? Yes ( ) No (X)

Please describe No plans at this time

Please return the completed survey (mail or e-mail) by June 30, 2025 to:

Lyle Lutz, Wastewater Manager
E-mail: llutz@ploverwi.gov
Mail to: Plover Wastewater Utility
4496 Coolidge Avenue
Plover, WI 54467

Plover Wastewater Utility
4496 Coolidge Avenue
Plover, WI 54467
Phone (715) 345-5259

Wastewater Treatment Facility Plan
Industrial Survey

Business Name_Monogram Foods_____ Contact Name_Andrew Green_____
Address___1434 Post Road_____ Phone___715-459-6107_____
City__Plover_____ Survey Completed Date_____22 Aug 2025_____
Zip Code____54467_____ Completed By Andrew Green_____

Product manufactured or service performed:_Frozen Appetizers_____

Existing Conditions

1) Number of employees____150_____ Operating Days_____260_____ Operating Shifts_2_____

2) Is water used for manufacturing and/or service? Yes (X) No ( ) (Please refer to your records) average gallons per day

3) What is the wastewater discharge volume to the sanitary sewer? _____75,000___average gallons per day

4) Is process wastewater discharged to the sanitary sewer? Yes (X) No ( )
_____75,000_____ average gallons per day ___145,000_____maximum gallons per day
Process wastewater is from manufacturing and/or service provided. It does not include domestic usage such as bathrooms and employee facilities.

5) Does your product contain phosphorus (food industry, beverage industry, etc.)? Yes ( ) No (X)

6) Do you use any substances containing phosphorus in your production and cleaning activities? Yes (X) No ( )
These substances may be detergents, cleaning agents cooling water additives etc.
If yes, please provide a list of all the substances containing phosphorus and the amount used per month in pounds.

Phosphorus Containing Compound	Process Used in	Amount Used per Month (pounds)
Acid sanitizer LS8	Sanitation	12.7 Lb of phosphorus
Bright Shine LMR102	Sanitation	6 lbs of phosphorus
Bright Shinw 8 LMR103	Sanitation	32 lbs of phosphorus
Whistle Klean LCC105	Sanitation	16 lbs of phosphorus

7) For the above list, are you aware of any substitute chemicals, raw materials, or process changes that could be used or implemented to reduce the amount of phosphorus discharged to the sanitary sewer system? Yes ( ) No (X)
If yes, please describe_____

8) Are you aware of any substances used in your production or cleaning that contains PFAS/PFOS/PFOA compounds? If so, please list

Future Growth

9) Do you anticipate any increases in employment, production or wastewater discharge for the next 10 and 20 years? Yes ( ) No (X)
Please describe_____No plans at this time_____

10) If you answered Yes to 9, please estimate projected percent increases in wastewater discharge for the next 10 and 20 years.

	10 Years	20 Years
Wastewater discharge increase	_Unknown_____%	___Unknown_____%

11) Do you expect any changes in raw materials, chemicals, or products for the next 10 and 20 years? Yes ( ) No (X)
Please describe_____Would assume yes but no plans at this time_____

12) Are you planning any water conservation or wastewater minimization activities? Yes ( ) No (X)
Please describe_____No plans at this time_____

13) Are you planning any pretreatment infrastructure modifications or updates or new system installations? Yes ( ) No (X)
Please describe_____No plans at this time_____

-

Please return the completed survey (mail or e-mail) by June 30, 2025 to:

Lyle Lutz, Wastewater Manager
E-mail: llutz@ploverwi.gov
Mail to: Plover Wastewater Utility
4496 Coolidge Avenue
Plover, WI 54467

Plover Wastewater Utility
4496 Coolidge Avenue
Plover, WI 54467
Phone (715) 345-5259

Wastewater Treatment Facility Plan
Industrial Survey

Business Name: Ingredion
Address: 3100 Willow Dr
City: Plover, WI
Zip Code 54467

Contact Name_____
Phone_____
Survey Completed Date__06/23/2024_____
Completed By_____Ed Schroer_____

Product manufactured or service performed: Potato Starch / Modified Potato Starch – Dried and bagged

Existing Conditions

1) Number of employees: 34 Operating Days: 365 Operating Shifts: 2 shifts 12 hours

2) Is water used for manufacturing and/or service? Yes (X) No ( ) _____60,000_____ average gallons per day

3) What is the wastewater discharge volume to the sanitary sewer? _____75,000_____ average gallons per day

4) Is process wastewater discharged to the sanitary sewer? Yes (X) No ( )
_____75,000_____ average gallons per day _____125,000_maximum gallons per day
Process wastewater is from manufacturing and/or service provided. It does not include domestic usage such as bathrooms and employee facilities.

5) Does your product contain phosphorus (food industry, beverage industry, etc.)? Yes ( ) No (X)

6) Do you use any substances containing phosphorus in your production and cleaning activities? Yes ( ) No (X)
These substances may be detergents, cleaning agents cooling water additives etc.
If yes, please provide a list of all the substances containing phosphorus and the amount used per month in pounds.

Phosphorus Containing Compound	Process Used in	Amount Used per Month (pounds)

7) For the above list, are you aware of any substitute chemicals, raw materials, or process changes that could be used or implemented to reduce the amount of phosphorus discharged to the sanitary sewer system? Yes ( ) No (X)
If yes, please describe_____

8) Are you aware of any substances used in your production or cleaning that contains PFAS/PFOS/PFOA compounds? If so, please list
____NO_____

Future Growth

9) Do you anticipate any increases in employment, production or wastewater discharge for the next 10 and 20 years? Yes (X) No ( )
Please describe_____Wastewater discharge possibly. Our engineer and plant manager are out for the time being. They would know more than I on future plans._____

10) If you answered Yes to 9, please estimate projected percent increases in wastewater discharge for the next 10 and 20 years.

	10 Years	20 Years
Wastewater discharge increase	___25_____%	_____%

11) Do you expect any changes in raw materials, chemicals, or products for the next 10 and 20 years? Yes ( ) No (X)
Please describe_____

12) Are you planning any water conservation or wastewater minimization activities? Yes ( ) No (X)
Please describe_____

13) Are you planning any pretreatment infrastructure modifications or updates or new system installations? Yes (X) No ( )
Please describe_____I've heard rumors of a potential screener (I can't remember true name) prior to waste discharge_____

Please return the completed survey (mail or e-mail) by June 30, 2025 to:

Lyle Lutz, Wastewater Manager
E-mail: llutz@ploverwi.gov
Mail to: Plover Wastewater Utility
4496 Coolidge Avenue
Plover, WI 54467

Plover Wastewater Utility
4496 Coolidge Avenue
Plover, WI 54467
Phone (715) 345-5259

Wastewater Treatment Facility Plan
Industrial Survey

Business Name: McCain Foods USA, Inc
Address: 3975 Tall Pine Dr
City: Plover
Zip Code: 54467

Contact Name: Kris Falasco
Phone: 810-347-1672
Survey Completed Date: 9/8/2025
Completed By: Kris Falasco

Product manufactured or service performed: Frozen Food Manufacturing

Existing Conditions

1) Number of employees: 320 Operating Days: 7 per wk Operating Shifts: 24 hr 2 12 hr shifts

2) Is water used for manufacturing and/or service? Yes (✓) No ( ) 125,482 average gallons per day

3) What is the wastewater discharge volume to the sanitary sewer? Do not know average gallons per day

4) Is process wastewater discharged to the sanitary sewer? Yes (✓) No ( )
126,700 average gallons per day 225,000 maximum gallons per day
Process wastewater is from manufacturing and/or service provided. It does not include domestic usage such as bathrooms and employee facilities.

5) Does your product contain phosphorus (food industry, beverage industry, etc.)? Yes (✓) No ( )

6) Do you use any substances containing phosphorus in your production and cleaning activities? Yes (✓) No ( )
These substances may be detergents, cleaning agents cooling water additives etc.
If yes, please provide a list of all the substances containing phosphorus and the amount used per month in pounds.

Phosphorus Containing Compound	Process Used in	Amount Used per Month (pounds)
AC-55-5 Red-Sanitation -36 gal-369 lb		
Chilcare 100-Sanitation-48 gal- 448 lb		
DrySan Duo-Sanitation- 12 gal- 98 lb		
Ecocare 360-Sanitation -1 gal-8.2 lb		
Exelerate HS-Sanitation-40 gal-378 lb		
Lift RT-Sanitation-20 gal-181 lb		
Quorum Pink II LF-Sanitation-660 gal 5304		
Soil Off II-Sanitation- 20 gal-167 lb		
XY-12-Sanitation-2 gal-19 lb		

7) For the above list, are you aware of any substitute chemicals, raw materials, or process changes that could be used or implemented to reduce the amount of phosphorus discharged to the sanitary sewer system? Yes (✓) No ( )
If yes, please describe Working on extended runs to reduce the number of sanitations thus sanitation chemical use

8) Are you aware of any substances used in your production or cleaning that contains PFAS/PFOS/PFOA compounds? If so, please list
Not aware of PFAS containing chemicals

Future Growth

9) Do you anticipate any increases in employment, production or wastewater discharge for the next 10 and 20 years? Yes ( ) No (✓)
Please describe

10) If you answered Yes to 9, please estimate projected percent increases in wastewater discharge for the next 10 and 20 years.

	10 Years	20 Years
Wastewater discharge increase	_____%	_____%

11) Do you expect any changes in raw materials, chemicals, or products for the next 10 and 20 years? Yes ( ) No (✓)
Please describe

12) Are you planning any water conservation or wastewater minimization activities? Yes (✓) No ( )
Please describe
Working on reducing water spray, performing extended runs, and other water conservation projects

13) Are you planning any pretreatment infrastructure modifications or updates or new system installations? Yes ( ) No (✓)
Please describe

Please return the completed survey (mail or e-mail) by June 30, 2025 to:

Lyle Lutz, Wastewater Manager
E-mail: llutz@ploverwi.gov
Mail to: Plover Wastewater Utility
4496 Coolidge Avenue
Plover, WI 54467

Appendix C

Detailed Capital Improvement Plan Cost Opinions

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

NEW SPRINGVILLE LIFT STATION, FORCEMAIN, AND INFLUENT GRAVITY SEWERS
PLANNING LEVEL COST OPINION

General Description

Construct a new Springville Lift station and force main to provide capacity for year 2045 flows (4.35 cfs). Allow for expansion to convey 2065 flows (7.58 cfs). Increase capacity of gravity sewers influent to the new lift station beginning at Bel-Aire Drive and Porter Road with a new 27-inch sewer. Install new 8-inch gravity sewer from the exisitng Lift Station to the new 27-inch sewer. Replace and extend the existing 8-inch forcemain with a new dual 16-inch forcemain. Current discharge at Springville Drive and Heatherton lane to be relocated to Roosevelt Drive and Washington Avenue. A new exterior generator with automatic transfer switch will be included.

Alternative Initial Cost Summary

Discipline Cost Summary	Initial Cost
Process-Mechanical	$865,000
Architectural/Structural	$45,000
Civil (Lift Station Site)	$227,500
Civil Sewers and Forcemains	$4,100,000
Electrical	$250,000
Instrumentation & Control	$50,000

Discipline Cost Subtotal		$5,537,500
Contingency	30%	$1,661,250
Subtotal		$7,198,750
Contractor Overhead & Profit	25%	$1,799,688
Total Construction Cost		$8,998,000
Engineering	15%	$1,349,700
Total Initial Cost		$10,348,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

NEW SPRINGVILLE LIFT STATION, FORCEMAIN, AND INFLUENT GRAVITY SEWERS

Process-Mechanical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Demolish Existing Pump Station	ls	1	20,000	20,000
Package Pump Station and Enclosure	ls	1	800,000	800,000
Temporary Bypass Pumping	ls	1	45,000	45,000
			Process-Mechanical Subtotal	$865,000

Architectural/Structural Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Manhole Wetwell	ea	1	25,000	25,000
Concrete Slab and Sidewalk	ls	1	20,000	20,000
			Architectural/Structural Subtotal	$45,000

Civil Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Mobilization	ls	1	40,000	40,000
Construction Facilities	ls	1	10,000	10,000
Traffic Control	ls	0	0	
Construction Staking	ls	1	7,500	7,500
Erosion Control	ls	1	10,000	10,000
Unsuitable Soil Excavation and Disposal	ls	1	25,000	25,000
Site Restoration	ls	1	35,000	35,000
Asphalt Pavement	ls	1	40,000	40,000
Underground Piping and Fittings	ls	1	60,000	60,000
			Civil Subtotal	$227,500

Civil Sewers and Forcemains Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Dual 16-inch Forcemains	ln ft	4,600	450	2,070,000
Air Release/Vacuum MH	ea	2	25,000	50,000
27-inch Sanitary Sewer	ln ft	5,500	300	1,650,000
5-ft dia. Sanitary MH	ea	15	12,000	180,000
8-inch Sanitary Sewer	ln ft	650	200	130,000
4-ft dia. Sanitary MH	ea	2	10,000	20,000
			Civil Sewers and Forcemains Subtotal	$4,100,000

Electrical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Electrical	ls	1	150,000	150,000
Generator & ATS	ea	1	100,000	100,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

NEW SPRINGVILLE LIFT STATION, FORCEMAIN, AND INFLUENT GRAVITY SEWERS

Electrical Subtotal	$250,000

Instrumentation & Control Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
System Integration	ls	1	50,000	50,000
Instrumentation & Control Subtotal				$50,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

HOOVER LIFT STATION CAPACITY AND CONDITION UPGRADES AND EXTEND FORCEMAIN
PLANNING LEVEL COST OPINION

General Description

Replace pumps to increase firm capacity of the Hoover Avenue Lift Station for year 2045 flows (1.5 cfs). Replace and extend the existing 6-inch forcemain with a new 8-inch forcemain. Current discharge at Conventry Drive to be relocated to Porter Road.
Lift Station condition improvements include:
Upgrading to 480 volt 3-phase power.
Reinstall intrinsically safe relay for wet well instrumentation per code.
Confirm the age of the UPS battery and replace it if it is more than five years old.
Confirm whether the conduits originating in the wet well have seal-offs prior to splice box as required by code.
Install safety grating for hatch openings.

Alternative Initial Cost Summary

Discipline Cost Summary	Initial Cost
Process-Mechanical	$130,000
Architectural/Structural	$5,000
Civil (Lift Station Site)	$30,000
Civil Sewers and Forcemains	$717,500
Electrical	$150,000
Instrumentation & Control	$50,000

Discipline Cost Subtotal		$1,082,500
Contingency	30%	$324,750
Subtotal		$1,407,250
Contractor Overhead & Profit	25%	$351,813
Total Construction Cost		$1,759,000
Engineering	15%	$263,850
Total Initial Cost		$2,023,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

HOOVER LIFT STATION CAPACITY AND CONDITION UPGRADES AND EXTEND FORCEMAIN

Process Mechanical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Replacement Pumps 1.45 cfs	ea	2	65,000	130,000
			Process-Mechanical Subtotal	$130,000

Architectural/Structural Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Safety Grating	ls	1	5,000	5,000
			Architectural/Structural Subtotal	$5,000

Civil Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Air Release/Vacuum MH	ea	2	15,000	30,000
			Civil Subtotal	$30,000

Civil Sewers and Forcemains Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
8-inch Forcemain	ln ft	4,100	175	717,500
			Plumbing Subtotal	$717,500

Electrical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Electrical	ls	1	150,000	150,000
			Electrical Subtotal	$150,000

Instrumentation & Control Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Instrumentation & Control	ls	1	50,000	50,000
			Instrumentation & Control Subtotal	$50,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

NEW RIVER DRIVE LIFT STATION
PLANNING LEVEL COST OPINION

General Description
New River Drive Lift Station (0.75 cfs capacity)

Alternative Initial Cost Summary

Discipline Cost Summary	Initial Cost
Process-Mechanical	$445,000
Architectural/Structural	$25,000
Civil	$212,500
Electrical	$100,000
Instrumentation & Control	$50,000

Discipline Cost Subtotal		$832,500
Contingency	30%	$249,750
Subtotal		$1,082,250
Contractor Overhead & Profit	25%	$270,563
Total Construction Cost		$1,353,000
Engineering	15%	$202,950
Total Initial Cost		$1,556,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

NEW RIVER DRIVE LIFT STATION

Process-Mechanical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Demolish Existing Pump Station	ls	1	20,000	20,000
Package Pump Station and Enclosure	ls	1	400,000	400,000
Temporary Bypass Pumping	ls	1	25,000	25,000
			Process-Mechanical Subtotal	$445,000

Architectural/Structural Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Manhole Wetwell	ea	1	15,000	15,000
Concrete Slab and Sidewalk	ls	1	10,000	10,000
			Architectural/Structural Subtotal	$25,000

Civil Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Mobilization	ls	1	40,000	40,000
Construction Facilities	ls	1	10,000	10,000
Traffic Control	ls	1	15,000	15,000
Construction Staking	ls	1	7,500	7,500
Erosion Control	ls	1	10,000	10,000
Unsuitable Soil Excavation and Disposal	ls	1	25,000	25,000
Site Restoration	ls	1	35,000	35,000
Asphalt Pavement	ls	1	20,000	20,000
Underground Piping and Fittings	ls	1	60,000	50,000
			Civil Subtotal	$212,500

Electrical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Electrical	ls	1	100,000	100,000
			Electrical Subtotal	$100,000

Instrumentation & Control Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
System Integration	ls	1	50,000	50,000
			Instrumentation & Control Subtotal	$50,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

AIRLINE LIFT STATION CONDITION IMPROVEMENTS
PLANNING LEVEL COST OPINION

General Description

Construct condition improvements to the Airline Lift Station:
Replace existing pumps.
Replace existing valves.
Install 6'-0" precast concrete manhole to serve as a dedicated valve vault.
Install new pumps, valves, and discharge piping with a bypass pumping connection.
Upgrade to 480 volt 3-phase power.
Confirm the age of the UPS battery and replace it if it is more than five years old.
Install intrinsically safe barriers for wet well instrumentation per code.
Install safety grating for hatch openings.

Alternative Initial Cost Summary

Discipline Cost Summary	Initial Cost
Process-Mechanical	$120,000
Architectural/Structural	$15,000
Electrical	$75,000
Instrumentation & Control	$30,000

Discipline Cost Subtotal		$240,000
Contingency	30%	$72,000
Subtotal		$312,000
Contractor Overhead & Profit	25%	$78,000
Total Construction Cost		$390,000
Engineering	15%	$58,500
Total Initial Cost		$449,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

AIRLINE LIFT STATION CONDITION IMPROVEMENTS

Process Mechanical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Replacement Pumps	ea	2	45,000	90,000
Replacement Valves and Piping	ls	1	30,000	30,000
			Process-Mechanical Subtotal	$120,000

Architectural/Structural Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
6-ft diameter valve vault	ls	1	10,000	10,000
Safety Grating	ls	1	5,000	5,000
			Architectural/Structural Subtotal	$15,000
			HVAC Subtotal	$0

Electrical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Electrical	ls	1	75,000	75,000
			Electrical Subtotal	$75,000

Instrumentation & Control Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Instrumentation & Control	ls	1	30,000	30,000
			Instrumentation & Control Subtotal	$30,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

INDUSTRIAL PARK LIFT STATION CONDITION IMPROVEMENTS
PLANNING LEVEL COST OPINION

General Description

Construct condition improvements to the Industrial Park Lift Station:
Replace existing pumps.
Replace existing piping plug valves & check valves.
Install a cross tee in place of the existing Y fitting that connects each pump discharge to the forcemain, followed by a plug valve.
Install a sump with a 2-inch drain line.
Confirm the age of the UPS battery and replace it if it is more than five years old.
Install intrinsically safe barriers for wet well instrumentation.
Confirm whether the conduits originating in the wet well have seal-offs prior to splice box as required by code.
Move wet well vent pipe exhaust a minimum of 5 feet away from control panel.
Install safety grating for hatch openings.

Alternative Initial Cost Summary

Discipline Cost Summary	Initial Cost
Process-Mechanical	$120,000
Architectural/Structural	$5,000
Plumbing	$5,000
Electrical	$30,000
Instrumentation & Control	$30,000

Discipline Cost Subtotal		$190,000
Contingency	30%	$57,000
Subtotal		$247,000
Contractor Overhead & Profit	25%	$61,750
Total Construction Cost		$309,000
Engineering	15%	$46,350
Total Initial Cost		$355,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

INDUSTRIAL PARK LIFT STATION CONDITION IMPROVEMENTS

Process Mechanical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Replacement Pumps	ea	2	45,000	90,000
Replacement Valves and Piping	ls	1	30,000	30,000
			Process-Mechanical Subtotal	$120,000

Architectural/Structural Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Safety Grating	ls	1	5,000	5,000
			Architectural/Structural Subtotal	$5,000
			Civil Subtotal	$0

Plumbing Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Sump Pump and Piping	ls	1	5,000	5,000
			Plumbing Subtotal	$5,000

Electrical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Electrical	ls	1	30,000	30,000
			Electrical Subtotal	$30,000

Instrumentation & Control Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Instrumentation & Control	ls	1	30,000	30,000
			Instrumentation & Control Subtotal	$30,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

OKRAY LIFT STATION CONDITION IMPROVEMENTS
PLANNING LEVEL COST OPINION

General Description

Construct condition improvements to the Okray Lift Station:
Replace Pump 1.
Confirm the age of the UPS battery and replace it if it is more than five years old.
Replace UPS load side cable.
Install intrinsically safe relay for level transducer.
Confirm whether the conduits originating in the wet well have seal-offs prior to splice box as required by code.
Install safety grating for hatch openings.

Alternative Initial Cost Summary

Discipline Cost Summary			Initial Cost
Process-Mechanical			$45,000
Architectural/Structural			$5,000
Electrical			$15,000
Instrumentation & Control			$15,000
	Discipline Cost Subtotal		$80,000
	Contingency	30%	$24,000
	Subtotal		$104,000
	Contractor Overhead & Profit	25%	$26,000
	Total Construction Cost		$130,000
	Engineering	15%	$19,500
	Total Initial Cost		$150,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

OKRAY LIFT STATION CONDITION IMPROVEMENTS

Process Mechanical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Replacement Pump	ea	1	45,000	45,000
			Process-Mechanical Subtotal	$45,000

Architectural/Structural Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Safety Grating	ls	1	5,000	5,000
			Architectural/Structural Subtotal	$5,000

Electrical Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Electrical	ls	1	15,000	15,000
			Electrical Subtotal	$15,000

Instrumentation & Control Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
Instrumentation & Control	ls	1	15,000	15,000
			Instrumentation & Control Subtotal	$15,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

27-INCH POST ROAD RELIEF SEWER
PLANNING LEVEL COST OPINION

General Description

Extend 27-inch sanitary sewer from the intersection of Post Road and Lincoln Avenue to the east side of the Post Road and Maple Drive roundabout.

Alternative Initial Cost Summary

Discipline Cost Summary			Initial Cost
Civil Sewers and Forcemains			$840,000
	Discipline Cost Subtotal		$840,000
	Contingency	30%	$252,000
	Subtotal		$1,092,000
	Contractor Overhead & Profit	25%	$273,000
	Total Construction Cost		$1,365,000
	Engineering	15%	$204,750
	Total Initial Cost		$1,570,000

VILLAGE OF PLOVER
SANITARY COLLECTION SYSTEM MASTER PLAN
PLOVER, WI
14598

27-INCH POST ROAD RELIEF SEWER

Civil Sewers and Forcemains Detailed Cost Breakdown

ITEM	Units	Quantity	Unit Cost ($)	Initial Cost ($)
27-inch Sanitary Sewer	ln ft	2,800	300	840,000
Item	ea			
Item	ls			
Item	ls			
	Civil Sewers and Forcemains Detailed Cost Breakdown Subtotal			$840,000

Water System Report

To: Utility Committee, Gary Wolf, Steve Kunst
From: Matt Saloun, Water System Manager
Date: 03/16/2026

Project Updates:

- Lincoln water tower- AT&T completed antenna updates. (02/19/26)
  - Updating equipment/ replacing antennas (started (01/27/26)
- Well 1 Generator Project- Pre-construction meeting with Eagle Construction. (03/09/26) Anticipate work to start within the next month. Construction should go quickly, with the generator arriving onsite late summer/ early fall.
  - Finalized Request for Proposals, Advertised Bid Proposals, Pre-Bid Site visit, Bid Opening. Bid award to Eagle Construction for $336,990.
- Disk Tower- Nsight pre-construction meeting and equipment install completed (03/05/26)
  - Nsight lease updated. Working to schedule equipment re-install.
- Disk Tower- AT&T lease updated. Working to schedule equipment re-installs.
- Well 2- CTW here to pull well pump (03/11/26) and videotape well condition (03/12/26). Check valve is leaking. Evaluating repair versus replacement options. Well 2 will be temporarily offline.

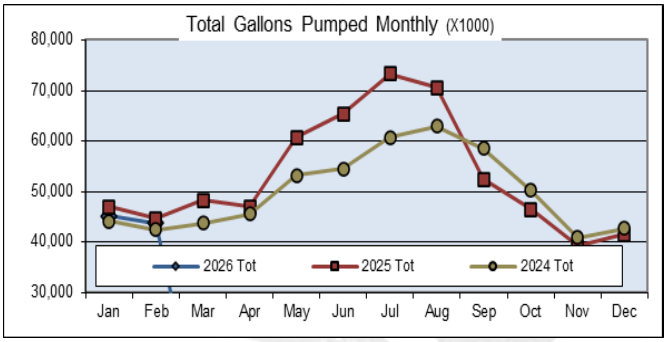
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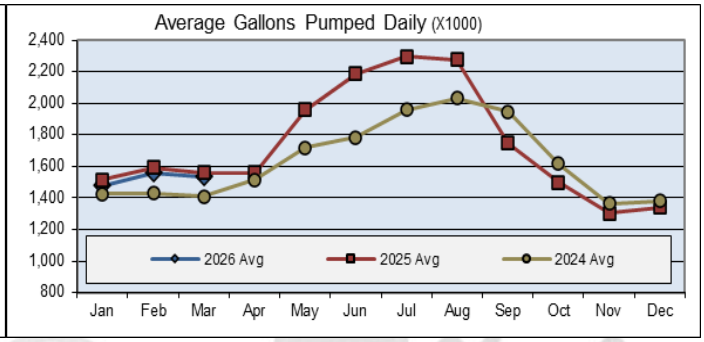
- Service leak at Plover Pointe Village #44. This is private water service. (02/14/26)
- SCADA upgrades- Work continues with SCADA computer upgrades for the Water Way and Pleasant Drive Treatment Plants.
- Staff continue with scheduled meter change outs, cross connection inspections and meter testing, 3 fire flow tests, GPS asset updating.
- Completion of 1st quarter water testing for nitrates and raw bacti.
- Green Tree Subdivision review and approvals.
- Completed annual Water Department safety training (02/23/26)
- Building curb box extensions/repair parts.
- Prepare 2025 audit material.
- Install conduit for security camera installation at Water Way plant.
- Service leak at 1201 Spruce Drive (homeowners)- 03/06/26
- Staff completed Village Annual Safety Refresher Training. (03/12/26)

Water System Report

Pumping Report

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year Summary		
2026	Well 1	21,796	16,640											38,436	43.23%	Tot
2026	Well 2	11,514	8,234											19,748	22.21%	Tot
2026	Well 3	11,866	18,855											30,721	34.55%	Tot
2026	Tot	45,176	43,729	0	0	0	0	0	0	0	0	0	0	88,905		Tot
2026	Avg	1,479	1,561	1,537												Avg
2026	Max	1,561	1,750	1,662												Max
Date of Maximum		10-Jan	15-Feb	4-Mar												
2026	Min	1,115	1,335	1,436												Min
Date of Minimum		1-Jan	21-Feb	8-Mar												
2025	Tot	46,970	44,609	48,350	47,054	60,722	65,348	73,369	70,588	52,465	46,505	39,171	41,570	636,721		Tot
2025	Max	1,783	1,765	1,820	1,802	2,326	2,773	2,884	3,043	2,290	1,909	1,548	1,534	3,043		Max
2025	Avg	1,515	1,593	1,559	1,560	1,958	2,189	2,298	2,277	1,748	1,500	1,305	1,340	1,737		Avg
2024	Tot	44,171	42,507	43,714	45,534	53,251	54,487	60,771	62,981	58,480	50,214	40,892	42,754	599,756		Tot
2024	Max	1,633	1,570	1,854	1,755	2,159	2,292	2,372	2,259	2,329	1,946	1,688	1,582	2,372		Max
2024	Avg	1,424	1,429	1,410	1,517	1,717	1,786	1,960	2,031	1,949	1,619	1,363	1,379	1,632		Avg



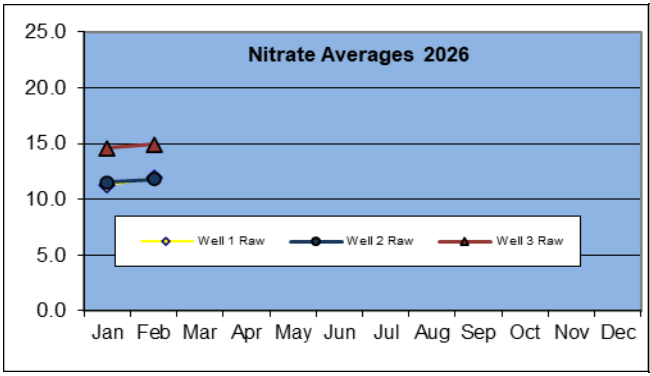


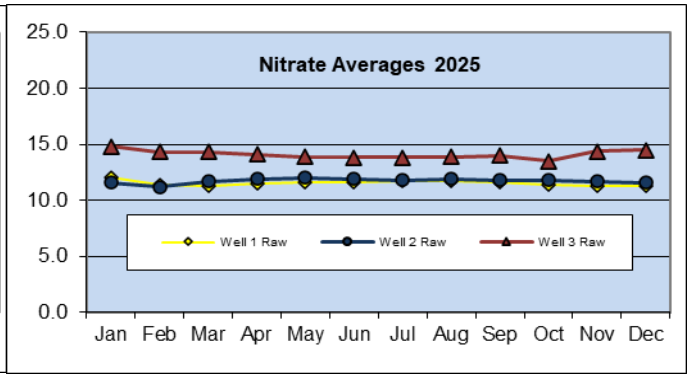
Nitrate Report - 2026

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Well 1 Raw	11.3	11.9										
Well 2 Raw	11.5	11.8										
Well 3 Raw	14.6	14.9										
Well 1&2 Dist	6.9	7.2										
Well 3 Dist	7.3	7.5										

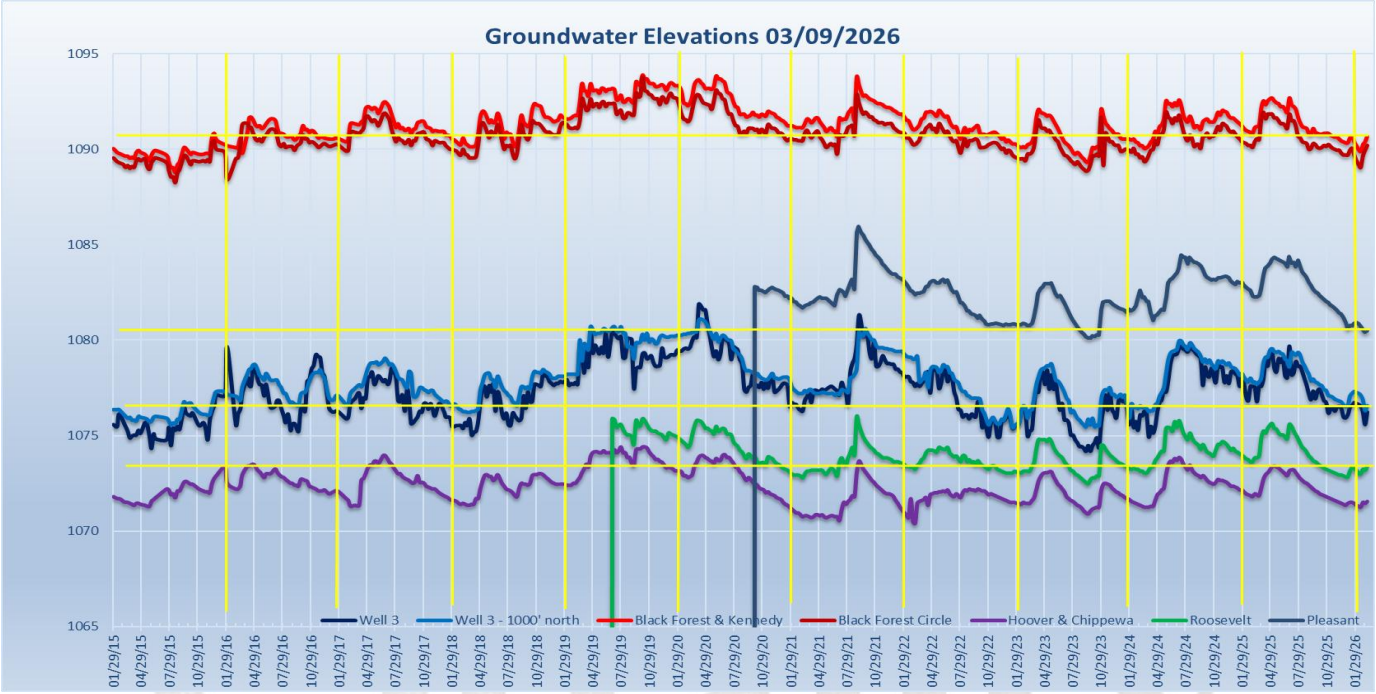
Nitrate Report - 2025

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Well 1 Raw	12.0	11.4	11.3	11.5	11.6	11.6	11.7	11.7	11.6	11.4	11.3	11.3
Well 2 Raw	11.6	11.2	11.7	11.9	12.0	11.9	11.8	11.9	11.8	11.8	11.7	11.6
Well 3 Raw	14.8	14.3	14.3	14.1	13.9	13.8	13.8	13.9	14.0	13.5	14.4	14.5
Well 1&2 Dist	6.7	6.7	6.7	6.8	7.0	6.9	6.9	6.9	7.0	6.8	6.7	6.8
Well 3 Dist	7.5	7.4	7.3	7.3	7.1	7.1	7.1	7.2	7.4	7.0	7.3	7.2





Water System Report



Quality On Tap!
Our Commitment Our Profession

Parameter Units	Flow MGD	CBOD mg/l	Suspended solids mg/l	Phosphorus mg/l	Ammonia mg/l
Design / Limit	1.8000	25	30	0.67	Daily Variable
February Average	1.6430	<2.7	4.3	.16	.23
March Average	1.5798	2.7	5.2	.17	.24

8. A final 2025 Effluent PFOS and PFOA Data report was submitted to the DNR in correlation with our continued monitoring schedule as outlined in our WPDES permit. The report is attached and outlines that the effluent PFOS and PFOA concentrations have remained below the applicable narrative standards that have been detailed in the Wis. Adm. Code.

Wastewater System Memo

To: Steve Kunst, Gary Wolf, Utility Committee, Village Board
From: Lyle Lutz
Date: April 9, 2026
Subject: Wastewater Utility Report

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1. Three proposals were returned for consideration of their engineering services of the River Drive lift station upgrade. They were reviewed and the decision was made to award the work to Clark Dietz, Inc. All the proposals were complete and well qualified.
2. The department is almost complete in its annual safety policy review/training. It is an annual requirement for review of the program applicable to the department.
3. A new biosolids application site is being evaluated for its potential application to be submitted to the DNR.
4. The annual collection system cleaning and inspection has been started as the weather allows. Each year the utility cleans and inspects 1/3 of the collection system sanitary mains and manholes. This program is outlined in our Collections Maintenance Operations and Management (CMOM) policy.
5. Monogram has reached out to initiate review of the current discharge agreements with both facilities. These agreements are up for their outlined renewal term initiated in 2016. These discharge agreements will be updated and a draft provided to them for their review and to provide an opportunity for them to request any adjustments in accommodating their future operations. One adjustment on the Village's side will be to change the renewal term to 5 years from 10 years to allow for more frequent review of flow and loading capacities.
6. Staff recognized and investigated into abnormally high pumping cycles at the Airline Dr. lift station in February. By using the basic camera inspection system, they were able to identify the clear water flow coming into the system at a sanitary lateral at 1601 Brenda Ave. It turns out that the residence has been unoccupied for a long time and the owner was not able to be contacted. The Water Department shut off the water at the curbstop and that alleviated the excessive water discharge from the unit. The building inspectors are looking into continuing the efforts of contacting the owner for further interior resolutions.
7. The facility received 4,800/16,850 gallons of septage, 59,906/70,150 gallons of holding tank, and 449,507/430,586 gallons of leachate in February/March. All processes have been working well and effluent produced has been of excellent quality.