Mineral Point, Wisconsin

CITY OF MINERAL POINT

137 HIGH STREET, SUITE 1
MINERAL POINT, WI 53565
608-987-2361

AGENDA

CITY OF MINERAL POINT
STREETS AND WATER & SEWER JOINT COMMITTEE MEETING
Tuesday, May 20, 2025, 5:30 PM
Community Room, City of Mineral Point City Hall

1. Call to Order, Roll Call, and Confirmation of Compliance with the Open Meetings Law.
2. Approval of February 4, 2025 minutes.
3. Discussion and Consideration of Well #4 and Well #3 Rehab.
4. Discussion and Consideration of a Desktop Corrosion Control Treatment Study.
5. Discussion and Consideration of inspection and adjustment of the primary clarifier.
6. Discussion and Consideration of a simplified rate case for the water utility.
7. Discussion and Consideration of the Compliance Maintenance Annual Report (CMAR).
8. Discussion and updates on other water and sewer issues.
9. Discussion and possible consideration of Commerce St. Parking Lot Lease.
10. Discussion of 2026-2027 Capital Improvements Plan and future infrastructure projects.
11. Discussion and updates on other street matters.
12. Discussion of meeting dates for Joint Water and Sewer Committee Meetings.
13. Adjourn.

Agenda Posted and Distributed: Tuesday, May 13, 2025

Reasonable accommodations for participation in this meeting by persons with disabilities, as defined by the Americans with Disabilities Act, will be made upon request and if feasible. Please contact the City Clerk's office (608-987-2361) at least 24 hours prior to the scheduled meeting so that necessary accommodations can be provided.

OFFICE OF THE CITY CLERK-TREASURER

Mayor – Danny Clark
City Administrator | Matthew Honer | administrator@cityofmineralpointwi.gov
City Clerk-Treasurer | Christy Skelding | cityclerk@cityofmineralpointwi.gov

Mineral Point, Wisconsin

CITY OF MINERAL POINT

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MINUTES

CITY OF MINERAL POINT JOINT MEETING
STREETS COMMITTEE AND WATER & SEWER COMMITTEE
Tuesday, February 4, 2025. 6:00 PM
Community Room, City of Mineral Point City Hall

CALL TO ORDER/ROLL CALL

Chair Christensen called the meeting to order at 6:00 pm.

Dean Martin	Present (6:18 pm)
Jared Weier	Present
Steph McKeon	Present
Mike Christensen	Present
Others Present: City Administrator Matthew Honer, Water/ Sewer Superintendent Nate Fosbinder. Bart Nies, Delta 3.	

APPROVAL OF MINUTES – (MCKEON/WEIER) December 5, 2024 minutes.

Motion (McKeon/Weier) to approve the minutes. Motion carried, all voting aye (3-0).

DISCUSSION AND POSSIBLE CONSIDERATION OF PROJECT PLANS, SPECIFICATIONS, ESTIMATES, AND AUTHORIZATION FOR DELTA 3 TO PROCEED WITH CONSTRUCTION BIDS FOR DAVIS ST. RECONSTRUCTION.

Nies presented the plans. Water services were discussed. Nies explained that pursuing grant funding for the lead service lines will end up costing the project more overall. Nies explained that the engineer has a good idea of where there is rock considering the projects on Chestnut and Pine Streets. Nies stated that the models don't anticipate the need for additional storm sewers. Nies stated that the intention is to try to maintain a 32' foot width. Nies explained the primary design matter that remains is regarding the sidewalk on the south side of the street. The Committee discussed that they would like to see as much of the width of the south side sidewalk remain and to try and to extend the sidewalk to Pine St. The committee discussed driveway openings, power and telecom lines, and gas lines. Nies asked about applying for a safe drinking water loan, Administrator Honer stated that he did not see why they would not apply. Planning for a Bid opening date of March 5th.

The Committee discussed the replacement of water mains on Washington, Mineral, and Wisconsin Sts as alternates to the project. Fosbinder recommended doing alternates for N. Wisconsin and Washington ST. from Wisconsin to Pine St.

Motion (Weier/McKeon) to recommend to City Council to approve the plans, specs, and estimates. Also authorizes them to proceeds with alternates. Motion carried, all voting aye (4-0).

Motion (McKeon/Weier) to recommend to City Council to approve the plans, specs, and estimates for Washington St from Pine to Wisconsin, and Wisconsin St from Washington to Mineral Street as alternate bids to include the street reconstruction. Motion carried, all voting aye (4-0)

DISCUSSION OF WATER MAIN REPLACEMENT PROJECTS

A.

DISCUSSION AND CONSIDERATION OF WASTE HAULER AGREEMENT

Nate would like to update agreement with cleaned up language and updated rates.

Motion (McKeon/Weier) to recommend approval of updated Waste Hauler Agreement by council. Motion carried, all voting aye (4-0).

DISCUSSION AND CONSIDERATION OF DOSING PUMP REBUILD

Nate presented an estimate from Sabel Mechanical to rebuild dosing pump.

Motion (Weier/Dean) to recommend approval of Sabel Mechanical to rebuild dosing pump to council. Motion carried, all voting aye (4-0).

DISCUSSION OF 2026 WATER TOWER CLEANING AND INSPECTION

Nate states we are due for an inspection in 2026, which is required. Nate recommends to take the tower offline and clean sediment from tower, conduct valve repair. Tower would be offline for about a week; a temporary water system would be in place for that time. Total project (cleaning, inspection, temporary water system, and valve replacement) might cost about $35k-$40k. No vote was needed or taken at this time.

DISCUSSION AND POSSIBLE CONSIDERATION OF WELL 4 REHABILITATION

Well 4 has been performing at 180 gal/min, while it should be 500 gal/min. Nate recommends accepting bid from Water Quality Investigations, specifically tasks 1, 2, 3, and 4 for a total of $17,716. Additional repairs would need to be bid after well is pulled and put back in service.

Motion (Weier/Dean) to recommend for council approval item 8, including tasks 1, 2, 3, 4, with the addition of testing well 3. Motion carried, all voting aye (4-0).

DISCUSSION AND UPDATES ON OTHER WATER AND SEWER ISSUES

261 5/8ths meters replaced in 2024; 241 manual reads left. All 300 replacement meters for 2025 have already been received. Water usage is way down due to leaks being found and repaired.

DISCUSSION AND UPDATES ON OTHER STREETS MATTERS

South St and Commerce St projects are being planned out for 2026; steering committees meeting in March. Possible funding coming from County. 2028 is planned for Highway 23 project.

ADJOURN.

Motion (McKeon/Dean) to adjourn at 7:52 pm. Motion carried, all voting aye (4-0).

Water Quality Investigations

Water Quality Investigations
Summary Report

Mineral Point Waterworks - Well 3 and Well 4

Investigation Objective:
Assess Well 4's water quality, determine cause of continuing corrosion, and determine the potential for corrosion issues at Well 3.

Sample Date: 02/25/2025
Report Date: 03/12/2025

Water Quality Investigations

2581 State Road 92, Suite 2
Mount Horeb, WI 53572
Phone: (888) 499-2507

Project: Mineral Point Waterworks - Well 3 and Well 4

OVERVIEW AND SUMMARY OF MAIN ISSUES IDENTIFIED IN THE STUDY

Data patterns indicate that corrosion issues observed in Well 4 are not caused by stray voltage and are instead the result of water quality and nutrient conditions that promote chemical and Microbial Influenced Corrosion (MIC) of minerology and well equipment. Water conditions in the Well 4 aquifer will naturally promote growth of an organic carbon cycling type of biofilm in the well, which can become problematic if not mitigated through routine maintenance. The water is nutrient limited with respect to nitrogen and phosphorus, which will cause MIC of well pumping equipment, the casing and minerology. Conditions in the aquifer supplying Well 4 are slightly different from those observed in Well 3, but both source water qualities will select for MIC and chemical corrosion of well pumping equipment and the well casing. The elevated chloride concentration relative to sulfate in Well 3 will promote chemical corrosion, which enhances MIC. Well rehabilitation and alternate pump installation techniques followed by routine maintenance will help minimize ongoing corrosion issues in both wells.

RECOMMENDATIONS AND CORRECTIVE ACTIONS

The following routine and enhanced maintenance actions are recommended to control/mitigate biofilm and biofilm-related corrosion issues in Well 3 and Well 4:

1. Immediately:
    a. Mechanically and chemically rehabilitate the wells starting with Well 4. This treatment would emphasize/target the well and nearby aquifer and will require a combination of specialty acids, biofilm disrupting chemicals and chlorine. The treatment will chemically treat the nearby aquifer, but will not completely remove biofilm or improve water quality from this region.
    b. Reinstall pumping using corrosion resistant materials and construction methods that minimize the potential for corrosion. This includes the use of tape at joints to reduce failures at couplings, use of epoxy coated pipe to reduce corrosion, use of a recycle line to reduce stagnancy and corrosion above the pump and the use of a special coupling lubricant to reduce crevice corrosion at threads.
    c. While this rehabilitation work is important, it will not eliminate biofilm from returning to the well or remove it from the connected aquifer(s). This means that preventative maintenance is needed once rehabilitation work is complete.
2. Annually:
    a. Shock chlorinate the well to gradually injure and reduce the presence of biofilm in the well and borehole.
    b. WQI offers follow up testing to ensure implemented treatments and rehabilitation is sufficient in mitigating biofilm. Given the recommended frequency of well treatment, this can be completed 12 months following initial rehabilitation to assess trends and the need for annual work. This service can be provided upon request.
3. Every 4 to 8 years: Chemically rehabilitate the well to further control/reduce the presence of biofilm in the well. The need for this work would be based on results of routine monitoring to assess effectiveness of preventative maintenance work.

See below for the data trends that informed the above conclusions and recommendations.

Water Quality Investigations

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Phone: (888) 499-2507

Project: Mineral Point Waterworks - Well 3 and Well 4

OVERALL ASSESSMENT AND RESULTS

1. Data patterns indicate that water quality and nutrient conditions in the Well 4 aquifer will promote the natural growth of a carbon cycling type of biofilm in well whereas in Well 3 they will promote the natural growth of a nitrogen cycling type of biofilm in well. These biofilm types are known to cause Microbial Influenced Corrosion (MIC) of metals and minerals if left unmanaged and become thick. It is important to understand the following nutrients and biofilm:
    a. Nutrients in drinking water are not regulated by the EPA or Wisconsin DNR.
    b. The source water at Well 3 is missing a necessary nutrient, namely iron, for nitrification and nitrogen cycling. The nitrifying biofilm that forms within the well will seek out necessary sulfur and iron, and cause MIC of the minerology, well equipment, and casing.
    c. The source water at Well 4 is missing a necessary nutrient, namely nitrogen and phosphorus, for carbon cycling. The carbon cycling biofilm that forms within the well will seek out these necessary nutrients and cause MIC of the minerology, well equipment, and casing.
    d. This nutrient issue in the source water is amplified by high water age in the well above the well pump, and by periods of low-use, both of which promote enhanced biofilm growth and MIC.
    e. Excessive or unmanaged biofilm growth in a well can cause MIC in the well and downstream water system. This issue is currently of elevated concern because of biofilm conditions that have developed in the wells with Well 4 being worse. This issue is of low concern ***if periodic maintenance is performed.***
2. Water Quality Data generally indicate the following for the samples from Well 4:
    a. The excessive increase in microbial occurrence in the borehole sample compared to the aquifer sample is a clear indication that the well contains excessive biofilm.
    b. Increased concentrations of copper, iron, magnesium, manganese, nickel, phosphorous, and zinc in the borehole sample compared to the aquifer sample clearly indicate that corrosion is occurring in the well and that it is caused by MIC.
    c. The corrosion risk posed by chemical and MIC can be managed with regular maintenance and well rehabilitation.
3. Water Quality Data generally indicate the following for the sample from Well 3:
    a. Well 3's Aquifer has an elevated Chloride to Sulfate ratio, indicating an elevated to excessive risk for chemical corrosion in the well and downstream water system. The products of chemical corrosion promote biofilms that perform MIC, resulting in worsened corrosion over time.
    b. The elevated nitrate and chloride in Well 3 suggest that the well is influenced by a shallow aquifer system.
    c. The corrosion risk posed by chemical and MIC in Well 3 can be managed with regular maintenance and well rehabilitation.
4. When comparing Well 3 to Well 4:
    a. Data suggest that the wells are under the influence of different nutrient and water quality conditions yet they both experience similar biofilm issues and have an increased potential for MIC. In wells with similar corrosion concerns, periodic rehabilitation work has generally reduced biofilm and decreased corrosion. Although the conditions within the aquifer(s) supplying Well 3 and Well 4 differ, both wells would benefit from regular maintenance and rehabilitation, including a reduced corrosion potential and increased lifespan of well equipment.
    b. The difference in water quality between the two wells creates differences in biostability in the water system. This causes biofilm turnover and an increased potential for the release of corrosion products to the water. <u>This and excessive biofilm conditions in the wells are the likely cause of the recent non-compliance with the Lead Copper Rule</u>.

5. It is difficult to control the quality of water from the aquifer connected to the well. This means that regular maintenance activities on the wells are needed to achieve the best water quality possible from the wells. Enhanced maintenance of the wells must be performed to prevent biofilm and biofilm-related issues from impacting the well and downstream water system. In addition to well maintenance, Unidirectional Flushing (UDF) of the mains in the water system would improve biostability and reduce corrosion at LCR sample sites.

WELL HISTORY

Mineral Point Well 4 has a history of corrosion issues. In 2021, corrosion of column pipe couplings led to the implementation of measures aimed at mitigating corrosion caused by stray voltage, including epoxy-coated column pipe, chemical rehabilitation of the well, and inspection of the Cathodic Protection system. In 2024, similar corrosion issues returned to Well 4, which led to this investigation. Well 3 was included as part of this investigation due to suspicion that it would experience similar water quality and corrosion issues. It is apparent that the issue in Well 3 is different, though both wells have biofilm and corrosion issues that need to be addressed. It is also apparent that the couplings used with the epoxy coated pipe were not adequately protected to stop crevice corrosion and that the chemical rehabilitation performed in 2021 was not aggressive enough to resolve biofilm issues in the well.

Water Quality Investigations

Project: Mineral Point Waterworks - Well 3 and Well 4
Sample Date: 02/25/2025
Report Date: 03/12/2025

Sample Name	Sample Description
W4 2 Minutes Borehole	Sample was collected after indicated time of pumping. Sample represents quality of untreated water from the cased and borehole region of the well after a period of non-use.
W4 4 Hours Aquifer	Sample was collected after indicated time of pumping. Sample represents average quality of untreated water from the aquifer(s) connected to the well.
W3 4 Hours Aquifer	Sample was collected after indicated time of pumping. Sample represents average quality of untreated water from the aquifer(s) connected to the well.

Project Location: Mineral Point, WI

Water Quality Investigations

2581 State Road 92, Suite 2
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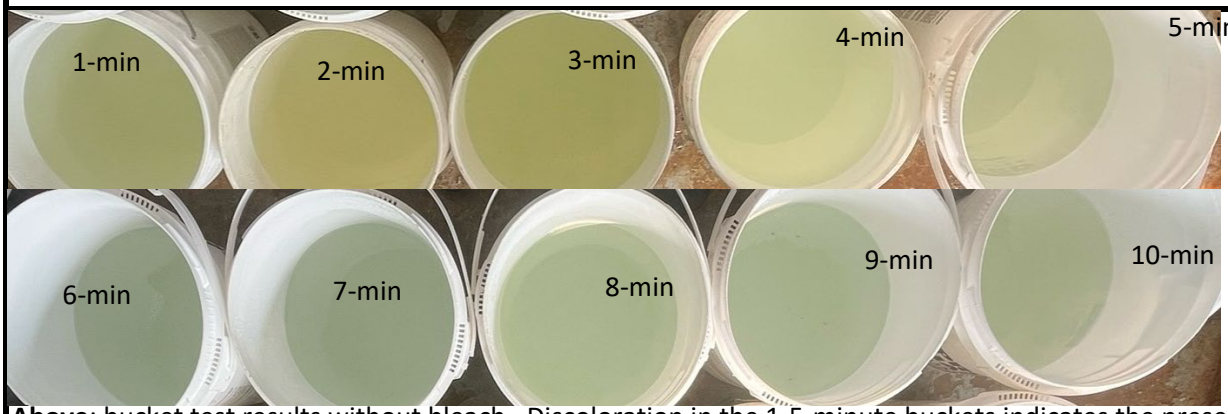
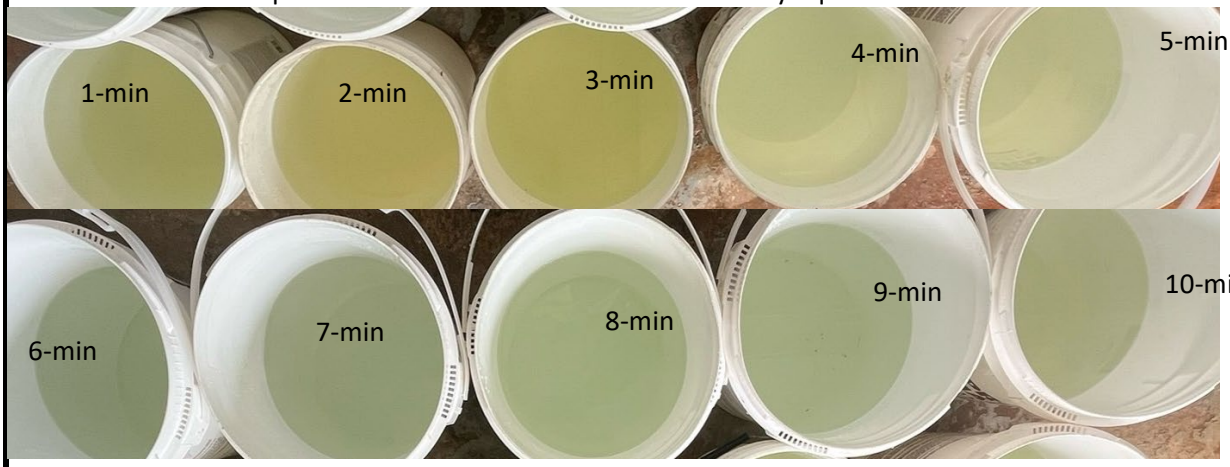
Project: Mineral Point Waterworks - Well 3 and Well 4

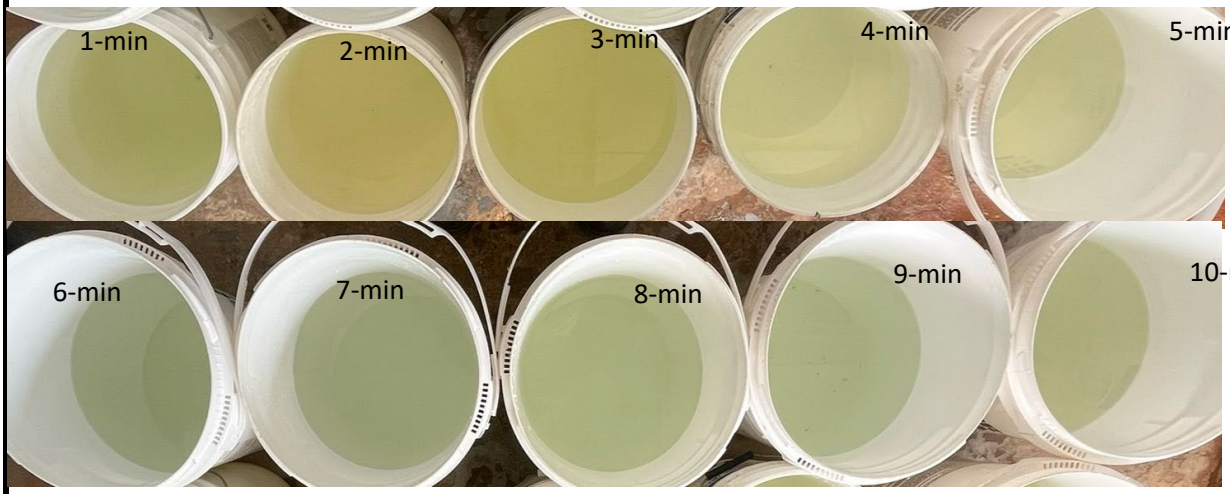
Mineral Point - Well 3



Above: bucket test results without bleach. Discoloration in the 1-5-minute buckets indicates the presence of biofilm and corrosion products in water from the well and nearby aquifer.



Above: bucket test results without bleach after sitting for 1 hour. There was a minor increase in discoloration over 1 hour, which indicates the presence of dissolved corrosion products in the water that became oxidized in the bucket.



Above: bucket test results with bleach. Discoloration in the buckets generally did not change.

Water Quality Investigations

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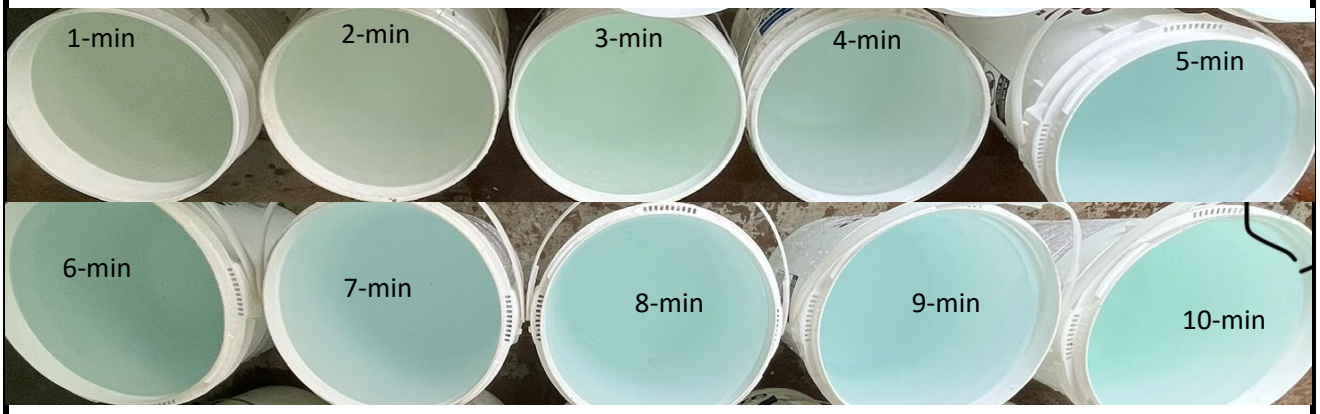
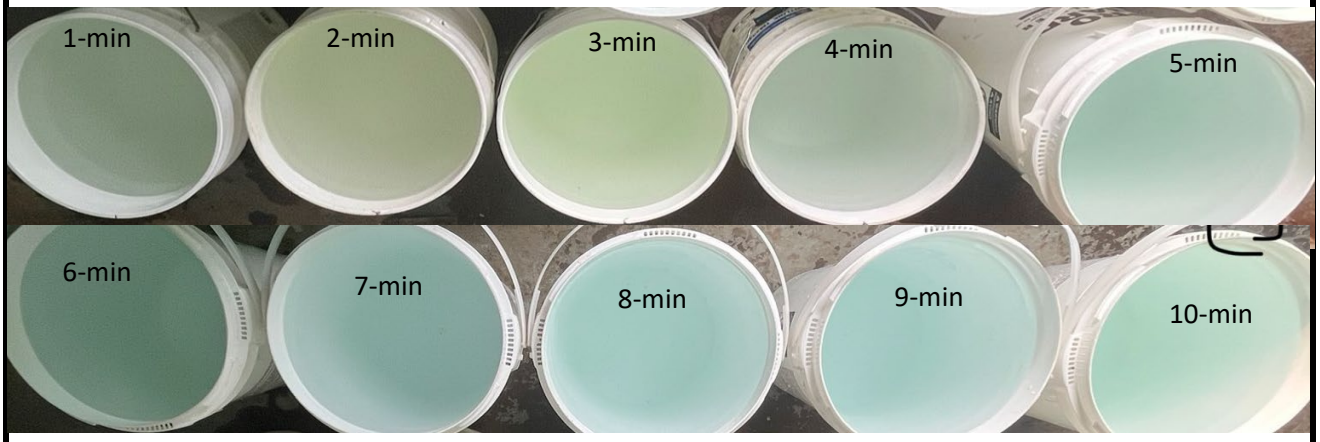
Project: Mineral Point Waterworks - Well 3 and Well 4

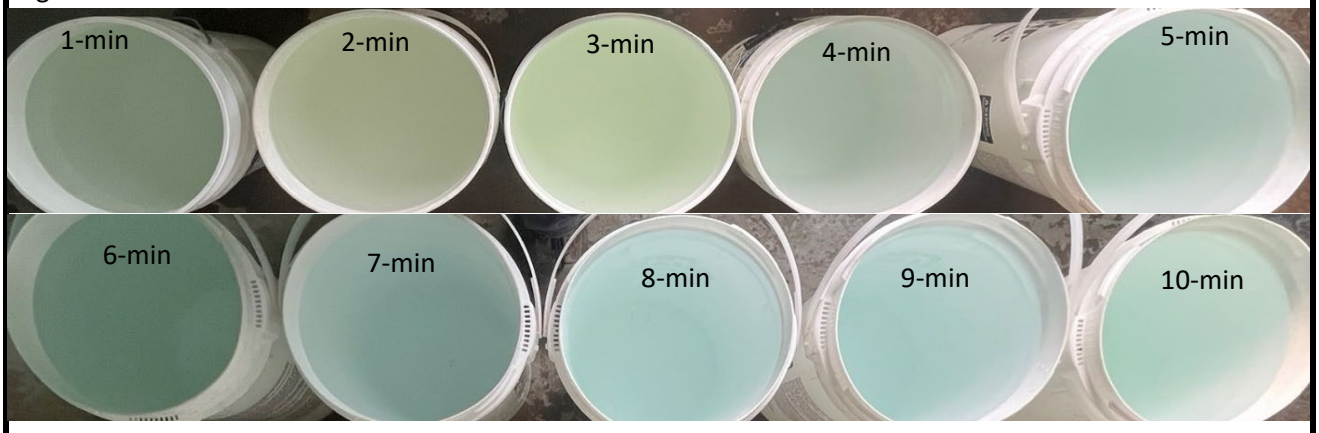
Mineral Point - Well 4



Above: bucket test results without bleach. Discoloration in the 1-2-minute buckets indicates the presence of biofilm and corrosion products in water from the borehole region of the well. Often, a bright blue color (as seen in the 3-10 minute buckets), is associated with nitrate and a nitrifying type biofilm (undesired).



Above: bucket test results without bleach after sitting for at least 1 hour. Deepened color in the 3-4-minute buckets indicates the presence of biofilm and dissolved corrosion products in water from the the borehole region of the well.



Above: bucket test results with bleach. Discoloration in the buckets generally did not change.

Water Quality Investigations

Project: Mineral Point Waterworks - Well 3 and Well 4

Overall System Assessment - Sample Comparison Matrix

Data patterns indicate that corrosion issues observed in Well 4 are not caused by stray voltage and are instead a result of water quality and nutrient conditions that promote chemical and Microbial Influenced Corrosion (MIC) of minerology and well equipment. Water conditions in the Well 4 aquifer will naturally promote growth of an organic carbon cycling type of biofilm in the well, which can become problematic if not mitigated through routine maintenance. The water is nutrient limited on nitrogen and phosphorus, which will cause MIC of minerology, well equipment, and the casing. Conditions in the aquifer supplying Well 4 are slightly different from those observed in Well 3, but both source water qualities will select for MIC and chemical corrosion of minerology, well equipment, and the well casing. The elevated chloride in Well 3, which a high chloride to sulfate mass ratio, promotes chemical corrosion, which enhances MIC. Routine maintenance, including well rehabilitation, will help minimize corrosion issues in both wells.

Assessment Parameter	W4 2 Minutes Borehole	W4 4 Hours Aquifer	W3 4 Hours Aquifer
Biofilm Thickness:	excessive	excessive	moderate
Biofilm Instability:	moderate	low	low
Biofilm Nutrient Severity:	moderate	low	moderate
Biofilm-Supporting Debris:	moderate	low	low
Chemical Corrosion Risk:	elevated	moderate	excessive
Lead MIC Corrosion Risk:	elevated	excessive	excessive
Copper MIC Corrosion Risk:	moderate	low	low
Opportunistic Pathogen Potential:	low	low	low
DBP Formation Potential:	low	low	low
Location where issue begins:	Source		

Notes:

This table provides an overall summary of results for each individual sample.
Biofilm stability and thickness are indicators of the potential for biofilm induced water quality and corrosion issues.
Biofilm nutrient severity assesses risk for biofilm formation.
Biofilm supporting debris assesses the presence of debris in the sample.
Chemical corrosion risk assesses the presence of conditions that promote chemical attack, including acidity and ions.
Lead MIC assess the potential for microbiologically influenced corrosion (MIC) of lead containing plumbing materials.
Copper MIC assess the potential for microbiologically influenced corrosion (MIC) of copper containing plumbing materials.
Opportunistic pathogen (OP) risk uses data patterns to assess if conditions exist to harbor OPs in biofilm.
Disinfection byproduct (DBP) formation risk assesses the potential to for DBPs if the water is chlorinated.

Water Quality Investigations

Project: Mineral Point Waterworks - Well 3 and Well 4
Biofilm Indication Test (BIT) DATA TABLE

Parameter (unit)	W4 2 Minutes Borehole	W4 4 Hours Aquifer	W3 4 Hours Aquifer
Date Collected (M/D/YY)	2/24/25	2/24/25	2/25/25
ME/mL	169,816	4,126	267
MBP EEM (FI)	63,249	48,403	64,885
DP EEM (FI)	99,273	89,208	166,630
TP EEM (FI)	162,522	137,611	231,515
BCI	1.0	0.7	0.9
ORP (mV)	365	381	350
p.H. (s.u.)	7.93	7.83	7.70
Specific Conductance (uS/cm)	727	714	1,072
AOC_S (mg/L)	0.00	0.00	0.00
Nitrate (mg/L as N)	0.00	0.00	2.88
WQI Protein Assay (mg/L)	0.76	0.47	0.76
Spike Recovery	311%	371%	287%
Dis. Cu Est (µg/L)	2	0	70
Filter Color	2	0	0
Nitrite as N (mg/L)	BDL	BDL	0.00
Phosphate as PO4 (mg/L)	BDL	BDL	BDL
Heterotroph (organic carbon bacteria)	100%	100%	4%
Nitrification (ammonia bacteria)	0%	0%	96%
Est. Life of 1" copper pipe (years)	79	122	112
Net Copper Corrosion Potential (ug/L)	691	209	224
Net Lead Corrosion Potential (ug/L)	9	23	30
Total Copper Corrosion Potential (ug/L)	1,658	1,076	1,171
Total Lead Corrosion Potential (ug/L)	203	191	240

Note: For a set of samples, results would not change by more than 5% unless biofilm were present.

Water Quality Investigations

Project: Mineral Point Waterworks - Well 3 and Well 4

Biofilm Activity Test (BAT) **DATA SEVERITY INDEX SUMMARY**

Parameter	W4 2 Minutes Borehole	W4 4 Hours Aquifer	W3 4 Hours Aquifer
Date Collected (M/D/YY)	2/24/25	2/24/25	2/25/25
DSI: PO4	7.2	6.6	6.8
DSI: Sulfur	8.0	8.2	6.8
DSI: Complex OA	2.0	2.1	1.6
DSI: Simple OA	1.1	0.9	0.9
DSI: Protein Degrade	4.7	4.4	3.4
DSI: Simple Sugar	1.9	1.3	1.6
DSI: Ammonia and/or Protein	6.8	5.7	6.0
DSI: Biofilm Degrade	3.9	3.7	5.3
DSI: Iron/Metal Deficit	1.3	1.4	1.0
MSI: PO4	0.0	0.3	0.0
MSI: Sulfur	6.8	7.7	7.7
MSI: Complex OA	4.4	5.8	4.3
MSI: Simple OA	3.0	3.0	2.9
MSI: Protein Degrade	4.8	4.8	4.2
MSI: Simple Sugar	0.0	0.2	0.0
MSI: Ammonia and/or Protein	3.4	2.6	2.7
MSI: Biofilm Degrade	0.6	0.4	0.7

Note: For a set of samples, results would not change by more than 5% unless biofilm were present.

DSI: Severity index for decay related BAT components

MSI: Severity index for metabolism related BAT components

Acceptable:	
Moderate Concern:	
Elevated Concern:	
Excessive Concern:	

Project: Mineral Point Waterworks - Well 3 and Well 4
CHEMICAL WATER QUALITY DATA: Metals, Inorganics, and Nutrients

Parameter	W4 2 Minutes Borehole	W4 4 Hours Aquifer	W3 4 Hours Aquifer	Units	LOD
Alkalinity, tot. as CaCO3	320	320	330	mg/L	1.0
Aluminum, tot.	BDL	BDL	BDL	mg/L	0.0090
Antimony, tot.	BDL	BDL	BDL	ug/L	0.32
Arsenic, tot.	BDL	BDL	BDL	ug/L	1.1
Barium, tot.	11	12	41	ug/L	0.20
Cadmium, tot.	BDL	BDL	0.25	ug/L	0.12
Calcium, tot.	80	80	110	mg/L	0.13
Chloride, tot.	11	11	84	mg/L	0.32
Chromium, tot.	BDL	BDL	BDL	ug/L	1.2
Cobalt, tot.	1.5	1.3	1.9	ug/L	0.030
Copper, tot.	3.7	BDL	2.1	ug/L	0.69
Hardness, tot. as CaCO3	450	390	490	mg/L	0.099
Iron, tot.	1.3	0.048	BDL	mg/L	0.044
Lead, tot.	0.26	BDL	BDL	ug/L	0.25
Magnesium, tot.	61	47	53	mg/L	0.024
Manganese, tot.	14	9.4	18	ug/L	0.50
Molybdenum, tot.	3.5	2.0	BDL	ug/L	0.57
Nickel, tot.	5.5	4.9	7.3	ug/L	0.40
Nitrogen, Ammonia as N, tot.	BDL	BDL	BDL	mg/L	0.039
Nitrogen, NO2 and NO3 as N, tot.	BDL	BDL	3.2	mg/L	0.064
Phosphorus, tot.	0.043	BDL	0.042	mg/L	0.042
Potassium, tot.	0.72	0.75	1.9	mg/L	0.060
Silicon, tot.	4600	4900	6000	ug/L	18
Sodium, tot.	3.4	4.0	38	mg/L	0.14
Strontium, tot.	53	52	66	ug/L	0.31
Sulfate, as SO4	55	48	87	mg/L	0.61
Tin, tot.	BDL	BDL	BDL	ug/L	1.5
Total Organic Carbon (TOC)	0.58	0.52	0.85	mg/L	0.27
Turbidity	2.0	BDL	BDL	NTU	0.50
Zinc, tot.	35	13	160	ug/L	1.8

NT = Not Tested; BDL = Below Detection Limit; ***RED*** *values = exceeds a standard*

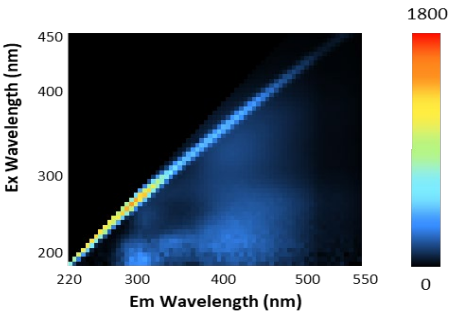
Note: For a set of samples from a given system, water quality would not change by more than 5% unless biofilm were present.

Project: Mineral Point Waterworks - Well 3 and Well 4
Sample Lab ID: 2025-02-25_A-02
Analysis Date: 02/25/2025
Collection Date: 02/24/2025
Sample Name: W4 2 Minutes Borehole

Water Quality Investigations

Overall Sample Assessment		
Sample location shows elevated concern for water quality and corrosion issues. Recommendations to address issues noted below are located in the Summary Assessment section at the front of this document.		
Assessment Parameters	**Value**	**Assessment Comment**
Biofilm Thickness:	excessive	Increased biofilm thickness is associated with biofilm-related issues.
Biofilm Instability:	moderate	Acceptable
Biofilm Nutrient Severity:	moderate	Acceptable
Biofilm-Supporting Debris:	moderate	Acceptable
Chemical Corrosion Risk:	elevated	Inorganic components within water are promoting corrosion.
Lead MIC Corrosion Risk:	elevated	Biological factors could cause corrosion of lead containing materials.
Copper MIC Corrosion Risk:	moderate	Acceptable
Primary MIC Cause:		Bacteria looking for needed sulfur for protein synthesis, nitrification
DBP Formation Potential:	low	Desired
Opportunistic Pathogen Potential:	low	Desired

Filter Picture (above)



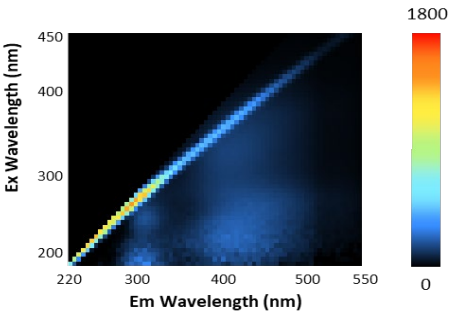
EEM (left) - A visual representation of microbially secreted compounds present in the bulk water. If biofilm were minimal or absent, this image would be blank and would not change between sample location and entry point or source water location. Scale bar to right shows excessive EEM fluorescence intensity (red) to no EEM (black).

Project: Mineral Point Waterworks - Well 3 and Well 4
Sample Lab ID: 2025-02-25_A-03
Analysis Date: 02/25/2025
Collection Date: 02/24/2025
Sample Name: W4 4 Hours Aquifer

Water Quality Investigations

Overall Sample Assessment		
Sample location shows moderate concern for water quality and corrosion issues. No general actions needed. Specific actions may be needed to correct issues.		
Assessment Parameters	**Value**	**Assessment Comment**
Biofilm Thickness:	excessive	Increased biofilm thickness is associated with biofilm-related issues.
Biofilm Instability:	low	Desired
Biofilm Nutrient Severity:	low	Desired
Biofilm-Supporting Debris:	low	Desired
Chemical Corrosion Risk:	moderate	Acceptable
Lead MIC Corrosion Risk:	excessive	Biological factors could cause corrosion of lead containing materials.
Copper MIC Corrosion Risk:	low	Desired
Primary MIC Cause:		Bacteria looking for needed sulfur for protein synthesis, nitrification
DBP Formation Potential:	low	Desired
Opportunistic Pathogen Potential:	low	Desired

Filter Picture (above)



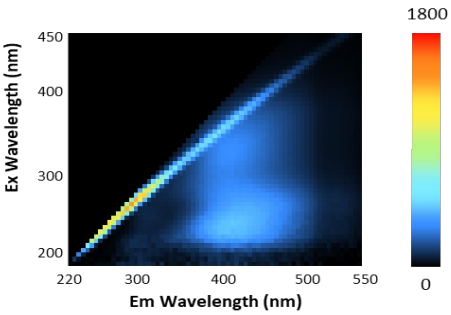
EEM (left) - A visual representation of microbially secreted compounds present in the bulk water. If biofilm were minimal or absent, this image would be blank and would not change between sample location and entry point or source water location. Scale bar to right shows excessive EEM fluorescence intensity (red) to no EEM (black).

Project: Mineral Point Waterworks - Well 3 and Well 4
Sample Lab ID: 2025-02-25_A-07
Analysis Date: 02/25/2025
Collection Date: 02/25/2025
Sample Name: W3 4 Hours Aquifer

Water Quality Investigations

Overall Sample Assessment		
Sample location shows moderate concern for water quality and corrosion issues. No general actions needed. Specific actions may be needed to correct issues.		
Assessment Parameters	**Value**	**Assessment Comment**
Biofilm Thickness:	moderate	Acceptable
Biofilm Instability:	low	Desired
Biofilm Nutrient Severity:	moderate	Acceptable
Biofilm-Supporting Debris:	low	Desired
Chemical Corrosion Risk:	excessive	Inorganic components within water are promoting corrosion.
Lead MIC Corrosion Risk:	excessive	Biological factors could cause corrosion of lead containing materials.
Copper MIC Corrosion Risk:	low	Desired
Primary MIC Cause:		Bacteria looking for a missing metal
DBP Formation Potential:	low	Desired
Opportunistic Pathogen Potential:	low	Desired

Filter Picture (above)



EEM (left) - A visual representation of microbially secreted compounds present in the bulk water. If biofilm were minimal or absent, this image would be blank and would not change between sample location and entry point or source water location. Scale bar to right shows excessive EEM fluorescence intensity (red) to no EEM (black).

Water Quality Investigations

2581 State Road 92, Suite 2
Mount Horeb, WI 53572
Phone: (888) 499-2507

Summary Report Explanation Page

- BIT™ = Biofilm Indication Test® (assesses the presence of biofilm and whether it is stressed or happy)
- BAT™ = Biofilm Activity Test® (assesses the activity of biofilm and which nutrients it is using or recycling)
- SI = Severity Index on a scale of 0 (good) to 10 (poor)
- Biofilm: A layer of diverse bacteria on a surface that have grown to form a colony. Biofilm attaches to a surface with a slime layer that protects the bacteria/colony from stress, including disinfection. Biofilm naturally grows inside of water distribution system mains, water treatment systems, plumbing, hot water heaters, softeners, process piping, fountains, groundwater wells, and more. Bacteria found in biofilms are typically harmless (but not always). Biofilm in a water system becomes a problem when conditions allow it to grow so thick that the bacteria can change the quality of the water or cause microbial induced corrosion. Thick biofilm can corrode plumbing fixture to increase metals in the water (such as lead and copper), cause an increase in disinfection demand and the formation of disinfection byproducts, and/or cause taste and odor complaints. Thick biofilms can also harbor opportunistic pathogens such as Legionella.
- ME = Microbial Equivalents: Estimate of total microbial occurrence in sample volume based on measurement of ATP present. Does not estimate ME in biofilm only ME in bulk water. Samples from a drinking water system with greater than 500 ME/mL have elevated microbial occurrence and are likely to be affected by microbial biofilms. In certain waters, low ME indicates the presence of an excessively thick biofilm because of stressful conditions.
- ORP = Oxidation Reduction Potential: A relative measure of the concentration of dissolved energy-bearing nutrients in the water, and/or is an indicator of an adequate disinfectant residual or disinfection conditions.
- pH = measure of acidity: pH of a sample is highly dependent on geology, aquifer/sediment/mineral chemistry, water source, the type of chemical/disinfectant used, and the type of microbial activity present. Change in pH can be caused by acid producing biofilm and certain bacterial metabolisms.
- Specific conductance: Estimate of the concentration of dissolved ions present in the water.
- AOC_S: A surrogate estimate of dissolved assimilable organic carbon present in the water, which is a subset of total organic carbon. Can be used to assess the presence of biofilm and biofilm-produced organic molecules.
- EEM = Excitation Emission Matrix: Provides information on the type of fluorescing organic carbons present in water (food for microbial growth and/or microbial created products) and/or exposure of water to biofilm. In general, the greater the EEM, the greater the starved biofilm presence was in the system sampled, with the proportion of each type of EEM indicating the underlying cause of biofilm.
- MBP = Microbial ByProducts EEM: Metabolic by products excreted by actively respiring microorganisms in water and biofilm. High levels create the potential for microbial induced corrosion. Units = FI (fluorescence intensity)
- DP = Decay Products EEM: Products caused by the decay of organic matter and/or biofilm. High levels indicate the presence of decaying organic matter and/or biofilm attempting to cause decay. Units = FI (fluorescence intensity)
- TP = Total Products EEM: Total of microbial produced compounds and fluorescing organic matter in water. Units = FI (fluorescence intensity)
- BCI = Biofilm Corrosivity Index: Assessment of biofilm's ability to cause corrosion of aquifer, equipment and/or plumbing materials. As BCI increases, the potential for microbial induced corrosion increases. A biofilm sloughing event could cause a spike in ME and BCI.
- BDL = Below Detection Limit.
- Filter Color: Color of filters used to process the samples is used to gauge the presence of biofilm and/or sloughed material in the water samples. All filters begin as white.
- Iron/Metal Limitation: Assesses the presence of bacterial molecules searching for needed metals for activation of metabolism related processes.
- Protein Assessment: Biofilms that are stressed often secrete proteins to alleviate stressful conditions. Stressors include a nutrient imbalance, disinfection and/or a change in nutrient conditions. Biofilm with excessive protein production can harbor Legionella.
- BAT MSI is a severity index that assesses the presence of biologically active molecules secreted by a metabolically active layer of biofilm. This can be a thin biofilm or the top layer of a thick biofilm.
- BAT DSI is a severity index that assesses the presence of biological molecules secreted by biofilm that is thick and has decay occurring.

Water Quality Investigations

Please prepare a price proposal as generally broken down below for performing all work described in the attached Well Rehabilitation Plan. Final payments will be for actual work performed.

Proposal due date: April 28, 2025.

Base Work Prices

Item	Description	Qty	Unit	Unit Price	Total
1	Step 1 through 3. Project mobilization, initial pump test and pull and inspect pumping equipment	1	L.S.	$	$
2	Step 1 and 3. Televise well	2	each	$	$
3	Step 2. Detonation Cord Mechanical Treatment	2	each	$	$
4	Step 2. Brushing mechanical treatment of the well with acid treatment; bailing	1	L.S.	$	$
5	Step 4 through 7. Setup and removal of chemical rehabilitation and treatment equipment	1	L.S.	$	$
6	Step 4. Initial purge of well prior to acid treatment	2	hour	$	$
7	Step 4. Perform acid treatment of well – initial strength treatment	2	each	$	$
8	Step 4. Perform acid treatment of well – supplemental dose treatment	1	each	$	$
9	Step 5. Perform chlorine treatment of the well – initial strength treatment	2	each	$	$
10	Step 5. Perform chlorine treatment of the well – supplemental dose treatment	1	each	$	$
11	Step 6. Perform chlorine-based treatment of well – initial strength treatment	2	each	$	$
12	Step 6. Perform chlorine-based treatment of well – supplemental dose treatment	1	each	$	$
13	Steps 4 thru 6. Intermediate purge	6	each	$	$
14	Step 7. Final Purge	1	each	$	$
15	Step 7. Reinstall Owner's pump and equipment, including necessary equipment preparation work	1	L.S.	$	$
16	Step 7. Final pump test, recycle line reinstallation, final disinfection, and final flushing	1	L.S.	$	$
17	Step 7. Obtain safe sample and return well to service	1	L.S.	$	$
				Total	$

Supplemental Item Prices

The following supplemental prices are for additions to or deductions from the work, as needed based on results reported during the rehabilitation process, to replace worn or damaged equipment, or to upgrade the installation.

Item	Description	Qty	Unit	Unit Price
S1	Inhibited HCl added to/subtracted from treatment	1	Gal.	$
S2	Sodium Hypochlorite added to/subtracted from treatment	1	Gal.	$
S3	Clearitas 101 added to/subtracted from treatment	1	Gal.	$
S4	Glycolic acid added to/subtracted from treatment	1	Gal.	$
S5	Additional brushing mechanical treatment, 40 passes	1	each	$
S6	Replace pump (match existing design)	1	L.S.	$
S7	Rebuild existing pump	1	L.S.	$
S8	Replace Oil Tube bearing – 2-1/2" x 1-1/2" brass	1	each	$
S9	5-foot section, Schedule 40 threaded and coupled, 8-inch column pipe, epoxy coated inside and outside	1	each	$
S10	10-foot section, Schedule 40 threaded and coupled, 8-inch column pipe, epoxy coated inside and outside	1	each	$
S11	5-foot section, Schedule 80 threaded and coupled, 2.5-inch oil tube pipe, epoxy coated inside and outside	1	each	$
S12	Conversion of pump installation from oil lube to water lube	1	L.S.	$

Mechanical and Chemical Well Rehabilitation Plan
Mineral Point Well #4, WUWN BF965 (1972 construction, 1985 reconstruction)

April 14, 2025 (Revision 1)

SECTION 1: GENERAL

Scope:

Rehabilitation of the well consists of mechanical treatment followed by chemical treatment. All chemicals used shall be NSF 60 certified. All materials used shall be NSF 61 certified. All work shall be performed in accordance with Wisconsin DNR Regulations and approvals. The scope of work generally consists of the following steps:

1. Initial pump test
2. Pump removal and well component inspection
3. Well televising
4. Mechanical treatment of the well
5. Well televising after mechanical treatment (optional – subject to deletion to meet budget)
6. Acid treatment of the well
7. Chlorine treatment of the well
8. Chlorine-based treatment of the well
9. Intermediate and final purging of treatments from the well
10. Reinstallation of Owner's Pump
11. Final chlorination of the well
12. Perform a post-treatment pump test
13. Recycle line installation
14. Test the well, obtain safe samples, and put the well back into service

Well Details:

1. Pump:
    a. Oil tube line shaft pump, Model Simmons SP10h 11-stage, designed for 500 gpm at 594 feet TDH (rebuilt in 2021).
    b. Motor is 100 hp, 1750 rpm (refurbished in 2021)
    c. Right angle drive backup operation
    d. Stainless steel shaft, 1-1/2 inch diameter
    e. 2-1/2 inch diameter oil tube – 5-foot lengths, threaded and coupled, epoxy coated (replaced in 2021).
2. Column Pipe = 8-inch diameter, epoxy coated (replaced in 2021)
3. Pump Setting = 405 feet
4. Static Water Level = 148 feet (verify)
5. Cased depth
    a. 30-inch steel from surface to 16 feet (temporary outer casing not removed)
    b. 16-inch steel from surface to 163 feet (installed 1972)
    c. 12-inch liner from surface to 401.5 feet (installed 1985)
6. Total well depth = 805 feet
    a. 15-inch diameter open borehole from 402 feet to 635 feet (wider than liner)
    b. 12-inch diameter open borehole from 635 feet to 805 feet **(120 feet of 2" PVC tremie left in well below 662 feet)**
7. Borehole volume = 4,060 gallons
8. Treatment volume = 6,100 gallons (1.5 borehole volumes)

Mechanical Treatment Details:

Initial mechanical treatment of the well occurs prior to chemical treatment to increase the effectiveness of biofilm removal and subsequent chemical treatment. General details of the mechanical treatment step include the following:

1. Detonation cord (DC) mechanical cleaning of the lower borehole.
    a. Perform DC treatment of the borehole from 425 feet (25 feet below the casing) to the bottom.
    b. Use 200 grain detonation cord from 425 feet to 805 feet.
    c. Perform DC treatment twice, sounding the well between each treatment to make sure there is not a bridge in the well.
2. Mechanical brushing of cased region with acid:
    a. Mechanical treatment involves use of a steel-bristle brush that fully contacts the inner circumference of the cased region of the well.
    b. Brush the full depth of casing for a minimum of 40 passes each. A single pass includes one cycle of brushing in the well, from near the top of the casing (10 feet) to the bottom (402 feet) and back to the top.
    c. Add 29 gallons of inhibited NSF 60 20-degree Baume Hydrochloric Acid (31% strength) mixed with 1,400 gallons of water just prior to start of bushing to assist with loosening and removing scale and biofilm in the cased region. Ensure the well house is properly ventilated as chemical treatment may give off a sulfide smell or volatile organic vapors, which may be hazardous to health.
3. Bail debris **and shattered PVC pipe** from well, discharging to a tank or sheeting for solids collection and disposal. Neutralize as necessary using caustic soda. When bailing, operate bailer to prevent issues with the borehole transition from 15-inch diameter to 12-inch diameter at about 635 feet.

Mixing Details:

Install a tremie to the bottom of the well before chemical treatment of the well for use in mixing and monitoring of rehabilitation chemicals. General details of this step include the following:

1. Install a temporary 200 gpm pump in the well, set at about 40 feet below static water level, with 3-inch discharge to the surface.
2. Install a 3-inch tremie from the surface to the bottom of well, which will be used for chemical recirculation in the well. This tremie could also be used for airlifting of debris from the well. The tremie should be made of steel to prevent damage or loss caused by the narrower diameter lower borehole and the crookedness of the well.
3. On the 3-inch surface piping, install a check valve, throttling valve, smooth sample tap, flow meter, and chemical injection taps, then a connection to the tremie to the bottom of the well.
4. When mixing and injecting chemical treatment in the well:
    a. Throttle the flow or operate the temporary pump using a VFD to control flow rate at approximately 175 gpm (mixing rate).
    b. Discharge 150 gpm to the bottom of the well through the tremie.
    c. Free-fall about 25 gpm to above the pump.
    d. Mixing Cycle = 23 minutes (time to turn over one well volume with mixing)

Chemical Treatment Details:

Chemical treatment of the well consists of an *acid treatment* step, *chlorine treatment* step, and a *chlorine-based treatment* step. General details of the chemical treatment steps include the following:

1. Ensure the well house is properly ventilated as chemical treatment may give off a sulfide smell or volatile organic vapors, which may be hazardous to health.

2. Treat 1.5 borehole volumes when treating the entire well to target treatment of the well and nearby aquifer. Chemical injection will be a two-step process:
    a. Inject the first single borehole volume of chemical during mixing of the borehole to achieve the specified concentration over one borehole recirculation time, which is the mixing interval.
    b. Inject the remaining treatment volume of chemical into the well to treat the nearby aquifer with the recirculation pump off, injecting chemical into water added to the well from the system. Add water to the well at the same rate that water was being recirculated in the well (175 gpm).
    c. The chemical injection rate for each chemical for designated mixing rate is equal to the required chemical volume divided by borehole volumes treated divided by the mixing interval.
3. Monitor chemical usage and observations on the **attached data form**.
4. Pending observations from each treatment step, chemical strength may be adjusted for subsequent steps using supplemental prices provided on the bid form to adjust the cost for the applied treatment.

Intermediate Purging Details:

General details of this step include the following:

1. For those steps requiring a purge of the chemical treatment from the well, purge at least five borehole volumes (about 1.7 hours at 200 gpm), to sanitary sewer. Once water clarity improves to a suspended solids concentration of less than 40 mg/L, water can be purged to a grass swale or where authorized by the regulatory agency, neutralizing as necessary.
2. Neutralize acidity, if pH below 6.0 su, with caustic soda.
3. Neutralize remnant free chlorine, if any, with sodium bisulfite or sodium thiosulfate.
4. When purging the well, add 150 gpm of system water to the tremie and free-fall 25 gpm into the well above the pump for the first 30 minutes of purging. This approach will ensure the entire borehole is rapidly purged of remnant chemical and discolored water.
5. Purging shall be in accordance with DNR regulations and the City of Mineral Point WPDES Discharge Permit.

Final Purging Details:

After chemical treatment is complete and the intermediate purge performed, pump the well to waste for 24 hours with Owner's pump reinstalled to a grass swale or storm sewer. Purging shall be in accordance with DNR regulations and the City's WPDES Discharge Permit.

Pump, Column Pipe, Oil Tube and Tail Pipe:

For replacement of the column pipe, oil lube tube and tail pipe, as determined by the inspection report or selected by the Owner, materials shall conform with the following:

1. Column and tail pipe: ASTM A53 Grade B seamless, Schedule 40, 8-inch diameter, interior and exterior of pipe and exterior of couplings epoxy coated in accordance with AWWA C210.
2. Disposal of existing column pipe, oil lube tube and accessories.
3. Pipe thread lubricant shall be fully wetting PTFE, NSF 61 certified, and field applied to both coupling faces to reduce the potential for crevice corrosion.

The oil used for pump tube lubrication shall be an NSF/ANSI Standard 61 approved mineral oil.

Supplemental price for conversion of the pump installation from oil lube to water lube, shall include all costs to perform the following:

1. Remove existing water lube stuffing box and convert to water lube
2. 8" x 2" stainless steel water lube drop-in spider w/ replaceable 1 ½" rubber bearings
3. Brass adapter bushing for oil lube to water conversion

4. Electrical time delay relay, 120 volt solenoid, copper piping and fittings, and relay logic for prelube line installation.
5. Reuse of existing 1 ½" diameter stainless steel shafts

Supplemental price for rebuilding the existing pump shall include all costs to tear down and reassemble the pump with new brass wear rings, new shaft bearings and new impeller skirts trimmed to manufacturer specifications, complete.

SECTION 2 – EXECUTION

Step 1: Initial Pump Test, Pump Pull, Televising, and Geophysical Logging

1. Perform an initial pump test for one hour with the Owner's pump in the well to document initial pumping conditions. Note discharge rate, discharge pressure and drawdown every 5 minutes for the first 15 minutes, then every 15 minutes thereafter.
2. Pull well pump. Collect mineral oil from the oil lube tube and properly dispose of. When pulling pump, prevent mineral oil from entering the well.
3. Inspect discharge fittings, pump, column pipe, couplings, and other related materials for wear and corrosion.
    a. Provide pictures of the column pipe and oil lube tube and fittings, especially below the pumping water level.
    b. Obtain scrapings of the column pipe and ship to WQI for a mineral and biofilm assessment. Discuss with WQI to determine if changes are needed to the treatment process. Assessment of this material will help determine the extent of acid treatment that will be required and the potential for ongoing issues.
    c. Pressure wash column pipe (inside and outside) and oil lube pipe (outside), spiders and pump to remove biofilm and scale and to allow for inspection (unless obviously damaged and in need of replacement).
    d. Inspect equipment. Provide inspection report and recommendations within 3 business days of pump removal for determination of need to replace or rebuild and if the pump install will be converted to water lube.
4. Televise the well to assess/document the current condition of the casing and borehole regions. Video shall be in color format with good focus and clarity to adequately allow determination of scale presence in the cased region, scale coloration and severity, integrity of casing welds and of the casing grout seal, and borehole minerology and borehole accumulations. Contractor to hold the camera stationary while televising to identify natural movement that would indicate fracture flow in the well under static conditions and which direction the flow moves (up, down or cross). Provide a video file in digital format for records.

Step 2: Mechanical Treatment

1. Mechanically treat the well as described in the Mechanical Treatment Details of the General Section.
2. Perform DC treatment prior to mechanical brushing treatment and bailing.
3. After completion of mechanical treatment, install the temporary pump to be used for chemical treatment work as described in Mixing Details in the General Section. Install this pump after Step 3 televising, if required.

Step 3: Televising Post Mechanical Treatment (Optional)

1. If deemed necessary by the Engineer, televise the well to assess/document the condition of the casing and borehole region after completion of the mechanical treatment. Add at least 10,000 gallons of system water to the well prior to televising to provide adequate clarity for assessing the condition of the casing. As needed, add water during televising to provide needed clarity. Video shall be in color format with good

focus and clarity to adequately allow determination of scale presence in cased region, scale coloration and severity, integrity of casing welds and of the casing grout seal, and material left in the bottom of the well.

2. Provide a video file in digital format for records.

Step 4: Acid Treatment Step (minimum 24 hours contact time)

1. Prior to chemical addition, add water to the tremie from the water system at about 200 gpm and pump the well to waste at 200 gpm to clear loose debris and biofilm from the well that was not removed with bailing. Perform this for 2 hours, adding about 24,000 gallons. Discharge this water into the sanitary sewer. If water is still excessively turbid after 2 hours, extend this initial purge for another hour.
2. Chemicals:
    a. NSF 60 20-degree Baume Hydrochloric Acid (HCl) (31% strength) – 9,600 mg/L dose
    b. 70% NSF 60 glycolic acid – 9,600 mg/L dose
    c. Initial strength treatment – pH of about 0.7 su:
        i. 189 gallons of 31% HCl (injection rate = 5.4 gpm into 175 gpm of mixed and added water)
        ii. 84 gallons of 70% glycolic acid (injection rate = 2.4 gpm into mixed and added water)
        iii. 5,827 gallons of well water and supplemental system water
    d. Supplemental strength treatment
        i. 95 gallons of inhibited HCl (injection rate = 4.1 gpm into 175 gpm of mixed water)
        ii. 42 gallons of 70% glycolic acid (injection rate = 1.8 gpm into 175 gpm of mixed water)
3. Add the initial strength treatment to the well. Mix the well continuously during working hours, monitoring pH and odor every 24 minutes of mixing (once per mixing cycle). Let the well sit unmixed overnight. Measure pH using a calibrated pH sensor.
    a. For odor assessment, waft the sample (**don't directly sniff**) to determine if it has a fruity, sweet, musty, pungent, "swimming pool" or metallic odor.
    b. If pH rises above 3 su within the first eight (8) hours of mixing an initial strength treatment, at the time point of pH rise above 3 su, add supplemental treatment over one mixing interval and continue to mix and monitor for an additional 24 hours.
    c. If pH rises above 3 su within the first eight (8) hours of mixing a supplemental treatment, or if the solution becomes excessively dirty, perform an intermediate purge and re-dose the well with a fresh batch of initial strength treatment.
    d. When pH stays below 3 su for 24 hours, treatment is complete. Perform an intermediate purge and neutralize as necessary.

Step 5: Chlorine Treatment Step (minimum 24 hours contact time)

1. Chemicals:
    a. 12.5% strength NSF 60 NaOCl
    b. Initial strength treatment – 3,000 mg/L dose:
        i. 146 gallons of 12.5% NaOCl (injection rate = 4.2 gpm into mixed and added water)
        ii. 5,954 gallons of well water and supplemental system water
    c. Supplemental strength treatment:
        i. 73 gallons of 12.5% NaOCl (injection rate = 3.2 gpm into mixed water)
2. Add initial strength treatment to the well. Mix the well continuously during working hours, monitoring pH, odor, and free and total chlorine residual once per mixing cycle. Measure chlorine residual using a calibrated device or high range and low range test strips to report to the nearest 100 mg/L of total chlorine and free chlorine.

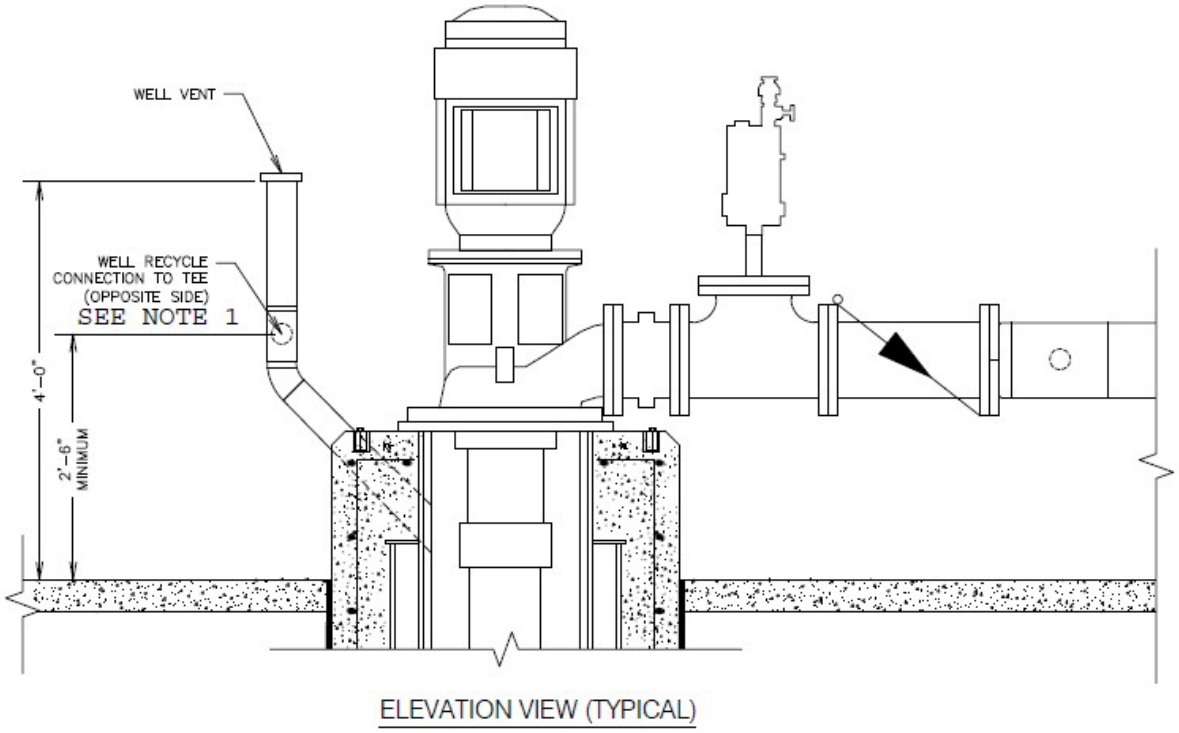
a. For odor assessment, waft the sample (**don't directly sniff**) to determine if it has a fruity, sweet, musty, pungent, "swimming pool", or metallic odor.
b. If free chlorine drops below 300 mg/L within the first four (4) hours of mixing an initial strength treatment:
    i. If no color is present, add an initial strength treatment over one mixing interval.
    ii. If water is yellow or excessively dirty, continue mixing until chlorine is completely consumed and perform an intermediate purge of the treatment from the well. Retreat the well with an initial strength treatment.
c. If free chlorine drops below 300 mg/L within the first eight (8) hours of mixing an initial strength treatment:
    i. If no color is present, add supplemental strength treatment over one mixing interval.
    ii. If water is yellow or excessively dirty, continue mixing until chlorine is completely consumed and perform an intermediate purge of the treatment from the well. Retreat the well with one half of an initial strength treatment, adding the treatment over one mixing interval.
d. When free chlorine stays above 300 mg/L for 24 hours, treatment is complete. Perform an intermediate purge of the well.

Step 6: Chlorine-Based Treatment Step: Chlorine, Glycolic, and Clearitas (minimum 24 hours contact time)

1. Chemicals:
    a. 12.5% NSF 60 NaOCl – 2,000 mg/L dose
    b. Clearitas 101, Blue Earth Products, NSF 60 – 10,000 mg/L dose
    c. 70% NSF 60 glycolic acid – 4,000 mg/L dose
    d. Initial strength treatment – final mixture should have a pH of about 4 su:
        i. 98 gallons of 12.5% NaOCl (injection rate = 2.8 gpm into mixed and added water)
        ii. 35 gallons of 70% glycolic acid (injection rate = 1.0 gpm into mixed and added water)
        iii. 61 gallons Clearitas 101 (injection rate = 1.8 gpm into mixed and added water)
        iv. 5,907 gallons of well water and supplemental system water
    e. Supplemental strength treatment:
        i. 49 gallons of 12.5% NaOCl (injection rate = 2.1 gpm into mixed water)
        ii. 18 gallons of 70% glycolic acid (injection rate = 0.80 gpm into mixed water)
2. Add initial strength treatment to the well. Mix the well continuously during working hours, monitoring pH, odor, and free and total chlorine residual once per mixing cycle. Measure pH using a calibrated pH sensor. Measure chlorine residual using a calibrated device or high range and low range test strips to report to the nearest 100 mg/L of total chlorine and free chlorine.
    a. For odor assessment, waft the sample (**don't directly sniff**) to determine if it has a fruity, sweet, musty, pungent, "swimming pool" or metallic odor.
    b. If free chlorine drops below 300 mg/L within the first 8 hours of mixing an initial strength treatment:
        i. If pH is below 6 su and minimal or no color is present, add supplemental strength treatment over one mixing interval.
        ii. If pH is above 6 su or the water is yellow or excessively dirty, continue mixing until chlorine is completely consumed and perform an intermediate purge of the treatment from the well. Retreat the well with an initial strength treatment.
    c. When free chlorine stays above 300 mg/L for 24 hours, treatment is complete. Perform an intermediate purge of the well prior to second mechanical treatment and/or reinstallation of the Owner's pump.

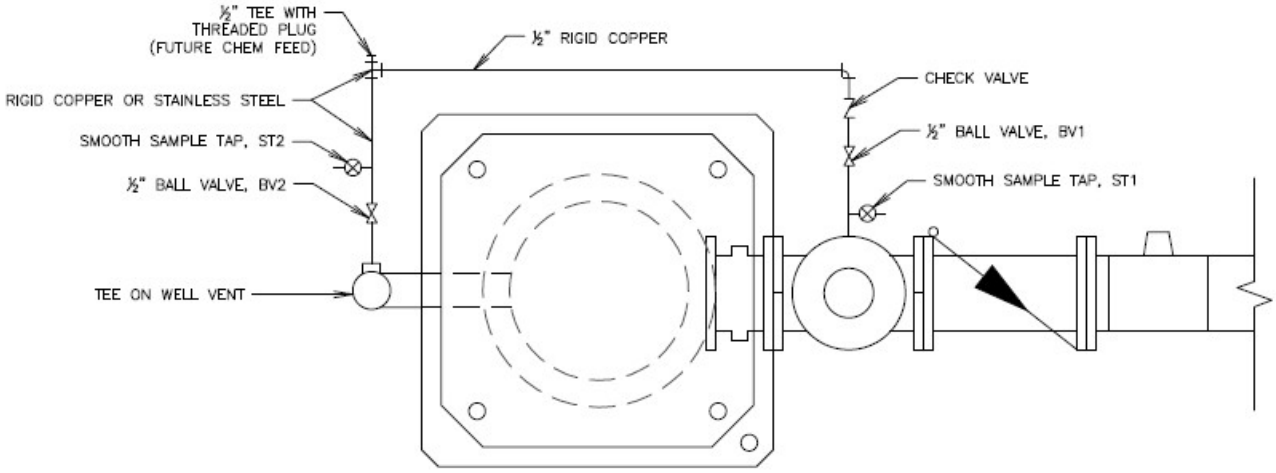
Step 7: Final Disinfection, Reinstallation of Owner's Pump, Casing Modification, Final Pump Test, and Recycle Line Installation

1. Remove the temporary pump.
2. Prepare equipment for reinstallation, including the following:
    a. straighten existing line shaft
    b. rebuild stuffing box on discharge head
    c. rebuild pump
    d. convert pump installation to water lubrication
3. Perform the following items to bring the well back online. Be sure to follow local regulations/requirements and conditions in the DNR approval.
    a. Chlorinate the well to 100 mg/L for final chlorination before reinstallation of Owner's pump. Contractor to flash mix sodium hypochlorite into water added to the well or use a combination of granular and tablet calcium hypochlorite to chlorinate the entire water column in the well.
    b. Reinstall equipment in well.
        i. Spray pumping equipment and piping with a 200 mg/l chlorine solution
        ii. Reinstall pump with existing motor, discharge head and shafting. When reinstalling pump and column pipe, fully tape the exterior of the pipe from 6-inch below to 6-inches above each coupling (column and oil lube) using a double layer of wide PVC tape to cover the joint and any defects in the epoxy coating.
        iii. Install two new airlines (one rubber and one polyethylene), taped at each joint and mid length of each column pipe section.
        iv. Reinstall existing transducer tube and transducer (if present).
        v. Install a new ½" copper line with ball valve between the existing sample tap and a new well vent connection for the well water recycle line (see **Figure 1**). Transition to 3/8" soft copper immediately before the discharge head connection.
        vi. Install 3/8" soft copper tubing for the well water recycle line through the new well vent connection (see **Figure 2**). Insert recycle line through a new watertight grommet.
        vii. Provide sanitary seal of discharge head to pump base.
    c. Reinstall right angle drive and motor.
    d. After the pump is reinstalled, surge the well three times to verify the well is chlorinated to 100 mg/L, supplementing chlorine as needed to achieve this dose.
    e. Let the well sit for 24 hours after final chlorination.
    f. Clean well house to as good or better condition that existed prior to start of work.
4. After the 24-hour wait period, pump the well to waste for a minimum of 24 hours to a grassed swale (final purge), neutralize as necessary.
5. Perform final pump test for one hour at beginning of final purge to document post rehabilitation pumping conditions. Note discharge rate and drawdown every 5 minutes for the first 15 minutes, and then every 15 minutes thereafter.
6. The first bacteria sample can be collected no sooner than 30 minutes after chlorine is no longer detectible. Collect two safe samples at least 8 hours apart before returning well back to service.



ELEVATION VIEW (TYPICAL)

NOTE 1: REPLACE TEE WITH A WYE FITTING. TRANSITION TO 3/8" COPPER TUBING AT WYE FITTING AND INSERT TUBING INTO WYE FITTING TO GET TUBING ABOUT 5 FEET BELOW DISCHARGE HEAD. SEAL TUBING AT WYE WITH A COMPRESSION FITTING. IF NO EXTERNAL VENT, CONNECT RECYCLE LINE TO SPARE FITTING ON DICHARGE HEAD WITH NO VENT.



PLAN VIEW (TYPICAL)

Figure 1. Generic well water recycle line detail.

Figure 2. Well water recycle line connection detail/well water recycle line connection detail with existing sample tap.

Water Quality Investigations

Well Rehabilitation Data Sheet

Project:

Contractor:

Employee:

Brushing observations:

Treatment Step (acid/chlorine/ chlorine-based)	Dose step (initial, supplemental, or full initial re-dose)	Date	Time	hours of contact up to "Time"	pH	Free Chlorine (mg/L)	Odor/Color/Notes (describe: musty, earthy, pungent, egg, sweet, etc)

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

Tony Evers, Governor
Karen Hyun, Ph.D., Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

May 12, 2025

CHRISTY SKELDING CLERK
CITY OF MINERAL POINT
137 HIGH ST, SUITE 1
MINERAL POINT WI 53565-0269

Project Number:	W-2025-0411
PWSID#:	12500840
DNR Region:	SCR
County:	Iowa

SUBJECT: WATER SYSTEM FACILITIES PLAN AND SPECIFICATION APPROVAL

Dear Ms. Skelding:

The Wisconsin Department of Natural Resources (department), Division of Environmental Management, Bureau of Drinking Water and Groundwater, is conditionally approving plans and specifications for the following project. An engineering report or information of sufficient detail to meet the requirements of s. NR 811.09(3), Wis. Adm. Code, was submitted along with the plans and specifications.

Water system name: Mineral Point Waterworks
Date received: 04/25/2025
Engineering firm: Water Quality Investigations, Inc.
Professional Engineer: Andrew Jacque, Ph.D., P.E.
Regional DNR Contact: Nathan Wells, 3911 Fish Hatchery Rd, Fitchburg WI 53711, (608) 843-4895, nathan.wells@wisconsin.gov
DNR Plan Reviewer: Kevin Karpinski, 101 South Webster Street, Madison WI 53707, (608) 852-2880, kevin.karpinski@wisconsin.gov

Project description: On behalf of the City of Mineral Point (City) Waterworks, Water Quality Investigations, Inc. has submitted plans and specifications for the rehabilitation of Well No. 4. The department hereby approves the well rehabilitation subject to the conditions below.

Well No. 4 (WUWN: BF965) was originally constructed in 1972 by Egerer-Galloway Well Corp., obtains water from a sandstone formation and has a total depth of 805 feet. A 30-inch diameter outer casing is set from the surface to a depth of 16 feet. A 16-inch diameter casing is set and grouted in place from the surface to a depth of 163 feet. The well was reconstructed in 1985 and a 12-inch diameter liner casing was set and grouted in place from the surface to a depth of 402 feet. A 15-inch diameter open borehole extends from 402 feet to a depth of 635 feet and a 12-inch diameter open borehole extends from 635 feet to a depth of 805 feet.

There is approximately 400 feet between the bottom of the Well No. 4 protective casing and the bottom of the open borehole. Due to the heavy biofilm encrustation of the well and significant loss of specific capacity, Water Quality Investigations, Inc. has requested only 50 feet of separation between the 200-grain detonation cord blasting and the well casing. If it is decided that detonation cord more powerful than 200-grain is to be used, the department must be contacted for further review and approval (See Condition No. 6 below).

The well rehabilitation work will be performed to reduce biofilm buildup.

Based on the submittal, all chemical products that will be used are ANSI/NSF 60 certified to be used during an offline well rehabilitation and the department understands the approach to the well rehabilitation work to be as follows:

1. Perform a short pumping test and document the existing well hydraulic parameters. Remove the permanent pumping equipment from the well. Televise the well.
2. Set a charge of 200-grain detonation cord from 452 feet to 805 feet, maintaining a minimum of 50 feet of separation from the grouted liner and casing. Perform a sounding to ensure there is not a bridge in the well. Repeat this step for a total of two detonations.
3. In an above grade mixing tank, mix 29 gallons of inhibited NSF 60 certified 31% active, 20-Baume hydrochloric acid and 1,400 gallons of water. Inject the chemical solution into the well via gravity.
4. Brush the well casing and screen with a stiff bristle brush. Bail fill as necessary.
5. Install a temporary 200 gallon per minute (gpm) pump 40 feet below the static water level. Pump the spent solution to the above grade mixing tank. Neutralize with caustic soda prior to discharging to the sanitary sewer and the ground surface.
6. Install a temporary 3-inch diameter tremie pipe to the bottom of the well. On the 3-inch diameter temporary well pump discharge piping, install a temporary check valve, temporary throttling valve, temporary sample tap, temporary flow meter, and temporary chemical injection taps. Connect the appurtenances to the tremie pipe.
7. Using the temporary pump and tremie pipe, add water from the distribution system for two hours while simultaneously pumping the well to waste to remove loose debris and biofilm. Discharge to the sanitary sewer. If the water is still turbid after two hours, extend this step by one hour.
8. In an above grade mixing tank, mix a solution consisting of 189 gallons of inhibited NSF 60 certified, 31% active, 20-Baume hydrochloric acid, 84 gallons of NSF 60 certified 70% active glycolic acid, and 5,827 gallons of water.
9. Throttle the temporary pump to 175 gpm and inject 150 gpm of the chemical solution into the bottom of the well using the temporary tremie pipe. Inject 25 gpm of the chemical solution into the well via gravity.
10. Surge the chemical solution in the well using the temporary pump, monitoring pH and odor once per mixing cycle during working hours. If the pH rises above 3.0 SU within the first eight hours, add a supplemental treatment of 95 gallons of inhibited NSF 60 certified, 31% active, 20-Baume hydrochloric acid and 42 gallons of NSF 60 certified 70% active glycolic acid.
11. Continue to surge the chemical solution for 24 hours. If the pH rises above 3.0 SU after adding a supplemental treatment or if the water is excessively turbid, pump the spent chemical solution to the above grade mixing tank and neutralize using caustic soda or soda ash prior to discharging to either the sanitary sewer or the ground surface.
12. After the chemical solution remains below 3.0 SU for 24 hours, pump the spent solution to the above grade mixing tank. Neutralize the spent solution using caustic soda or soda ash prior to discharging to either the sanitary sewer or the ground surface.
13. In an above grade tank, mix a chlorine solution consisting of 146 gallons of 12.5% active sodium hypochlorite and 5,954 gallons of water. Inject the chemical solution into the well using the temporary tremie pipe.

14. Surge the chemical solution in the well using the temporary pump, monitoring pH, odor and free and total chlorine residual once per mixing cycle during working hours. If the free chlorine drops below 300 mg/L within the first four hours of mixing and no color is present in the water, repeat Step 13. If the free chlorine drops below 300 mg/L within the first four hours of mixing and the water is yellow or excessively dirty, continue surging the chlorine solution until all of the chlorine is used up. Pump the spent solution to the above grade mixing tank. Neutralize with either sodium thiosulfate or sodium bisulfite prior to discharging to the sanitary sewer or the ground surface. Repeat Step 13. If the free chlorine stays above 300 mg/L for 24 hours, pump the spent solution to the above grade mixing tank. Neutralize with either sodium thiosulfate or sodium bisulfite prior to discharging to either the sanitary sewer or the ground surface and proceed to Step 15.
15. In an above grade tank, mix a chemical solution consisting of 98 gallons of 12.5% active sodium hypochlorite, 35 gallons of 70% active glycolic acid, 61 gallons of 100% active Clearitas 101, and 5,907 gallons of water. Inject the chemical solution into the well using the temporary tremie pipe.
16. Surge the chemical solution in the well using the temporary pump, monitoring pH, odor and free and total chlorine residual once per mixing cycle during working hours. If the free chlorine drops below 300 mg/L within the first eight hours of mixing and the pH is below 6.0 SU with no color present, repeat Step 15. If the free chlorine drops below 300 mg/L within the first eight hours of mixing and the pH is above 6.0 SU or if the water is yellow or excessively dirty, continue mixing until the chlorine is used up. Pump the spent solution to the above grade mixing tank. Neutralize with sodium bisulfite or sodium thiosulfate and caustic soda or soda ash prior to discharging to either the sanitary sewer or the ground surface. Repeat Step 15. If the free chlorine stays above 300 mg/L for 24 hours, pump the spent solution to the above grade mixing tank. Neutralize with either sodium thiosulfate or sodium bisulfite prior to discharging to either the sanitary sewer or the ground surface and proceed to Step 17.
17. Reinstall permanent pumping equipment after disinfecting it with a 200 mg/L chlorine solution.
18. Treat the water in the well with a 12.5% sodium hypochlorite solution to achieve a minimum chlorine residual of 100 mg/L.
19. Surge the well at least three times.
20. Let solution remain in the well for a minimum of 24 hours.
21. Pump spent solution to a neutralization tank. Neutralize with sodium thiosulfate or sodium bisulfite prior to discharging to the ground surface.
22. Perform a short pumping test and document the new well hydraulic parameters. After there is no detectable chlorine residual measured, the well will continue to be pumped to waste for at least 24 hours. Collect two bacteriologically safe samples a minimum of 8 hours apart before placing the well back in service.

Recirculation piping: During the reinstallation of the permanent pumping equipment of Well No. 4, a new recirculation line will be added to the well discharge piping to prevent stagnant water above the well pump. A 0.5-inch diameter copper tee will be installed where the existing sample tap is, upstream of the check valve on the well pump discharge piping. The existing sample tap will be reinstalled on the side of the tee. Following the tee, the 0.5-inch diameter copper recirculation piping will contain, in order: a ball valve, a check valve, a tee with one end provided with a threaded plug to be used for future chemical rehabilitation events, a tee with another smooth-ended sample tap installed on the side, and a ball valve. Following the ball valve, the recirculation piping will transition to 3/8-inch diameter soft copper piping and be fed through a new 2-inch diameter pipe tee connected to the existing 2-inch diameter well vent. A watertight grommet will seal the recirculation piping at the threaded well vent connection. The recirculation piping will terminate a minimum of 5 feet below the top of the well pump base. The pipe will be sprayed with a 200 mg/L chlorine solution before installation.

Liability: It is the responsibility of the owner and consultant to ensure that the well rehabilitation is completed in accordance with the requirements of ss. NR 811.12(11)-(13) & NR 811.12(19)-(20), Wis. Adm. Code, the conditions specified in this approval, and the applicable industry standards. It is also the responsibility of the owner and consultant to prevent the degradation of water quality in the well and to prevent any structural damage to well casings, grout, and screens. If the department discovers the well rehabilitation was not performed in accordance with the aforementioned requirements and conditions specified in this approval, it will be the owner's responsibility to contact the department to determine the requirements for correcting any deficiencies prior to placing the well back in service.

Approval conditions related to Chapters NR 810 and NR 811, Wis. Adm. Code:

1. A resident project representative shall be designated by the water supply owner or by the agent retained by the owner. The resident project representative shall be knowledgeable regarding the proposed construction and be able to ensure the improvements are being constructed in accordance with the department approved plans, specifications, and conditions of the approval. The project representative shall be present on the work site as needed to assure proper construction and installation of the improvements. (s. NR 811.11, Wis. Adm. Code)
2. After construction, maintenance, repair or modification, waterworks facilities shall be disinfected by procedure outlined in the applicable AWWA standards for wells, water mains, storage facilities or treatment facilities. Waterworks may not be placed in service until bacteriological samples have established that the water is bacteriologically safe. (s. NR 810.09(4), Wis. Adm. Code)
3. Based on well raw water quality and the proposed rehabilitation methods, the department is requiring additional sampling to verify water quality and to protect water consumers. Following the rehabilitation, and prior to placing Well No. 4 online, arsenic, nickel and iron samples shall be collected, analyzed, and reviewed. Kevin Karpinski and Nathan Wells shall be notified of the sample results. (ss. NR 810.06 & NR 811.12(12)(i), Wis. Adm. Code)
4. The resident project representative shall closely supervise the discharge of chlorinated water. In no case may water with a measurable total chlorine residual content be discharged to a surface water. Suitable barriers, aeration or chemical dichlorination shall be provided when discharging chlorinated water to a surface water or a storm sewer connected to a surface water to ensure the water discharged does not contain a measurable chlorine residual. (s. NR 811.12(12)(e), Wis. Adm. Code)
5. The water supply owner shall obtain approval of coverage under a Wisconsin Pollutant Discharge Elimination System (WPDES) wastewater general permit prior to the discharge of any chlorinated or treated water to waters of the state as a result of construction, disinfection, normal operations, or backwashing pursuant to s. 283.31, Wis. Stats and s. NR 810.19, Wis. Adm. Code. The approval process for WPDES wastewater general permits may take up to 30 days. Contact the regional wastewater specialist (Stephanie Gruenloh, stephanie.gruenloh@wisconsin.gov) or go to https://dnr.wisconsin.gov/topic/Wastewater/GeneralPermits.html for more information.
6. Blasting shall be conducted under the supervision of a licensed well driller and blaster licensed by the Department of Safety and Professional Services under s. SPS 305.20 (s. NR 811.12(11)(a), Wis. Adm. Code.
7. There is 403 feet between the bottom of the Well No. 4 protective casing and the bottom of the open borehole. Therefore, the 200-grain detonation cord shall be placed no less than 50 feet below the bottom of the protective well casing. If it is decided that detonation cord more powerful than 200-grain is to be used, the department shall be contacted for further review and approval (s. NR 811.12(11)(b), Wis. Adm. Code)
8. All material dislodged during the blasting shall be removed from the well. (s. NR 811.12(11)(c), Wis. Adm. Code)

9. Proper safety measures shall be employed to protect the workers and surrounding structures. (s. NR 811.12(11)(d), Wis. Adm. Code)
10. Kevin Karpinski and Nathan Wells shall be notified in writing within 30 days of completing the well work of the static and pumping water levels, the gallon per minute production rate and the specific capacity of the well before and following the completion of the well rehabilitation work. (s. NR 811.12(13)(b)6, Wis. Adm. Code)
11. The owner or owner's agent shall provide notification to Nathan Wells from the department's Fitchburg office upon completion of the improvements so that he can inspect the completed improvements and issue written authorization prior to placing the improvements in service, if he deems necessary. (s. NR 810.26(1), Wis. Adm. Code)

Approval constraints: The project was reviewed in accordance with ss. 281.34 and 281.41, Wis. Stats. for compliance with Chapters NR 108, NR 810, NR 811 and NR 820, Wis. Adm. Code and is hereby approved in accordance with ss. 281.34 and 281.41, Wis. Stats. subject to the conditions listed above. This approval is valid for two years from the date of approval. If construction or installation of the improvements has not commenced within two years the approval shall become void and a new application must be made and approval obtained prior to commencing construction or installation.

This approval is based upon the representation that the plans submitted to the department are complete and accurately represent the project being approved. Any approval of plans that do not fairly represent the project because they are incomplete, inaccurate, or of insufficient scope and detail is voidable at the option of the department.

Be advised that this project may require permits or approvals from other federal, state or local authorities. For example, a certificate of authority from the Public Service Commission of Wisconsin may be required per s. 196.49, Wis. Stats. and ch. PSC 184, Wis. Adm. Code.

Appeal rights: If you believe that you have a right to challenge this decision, you should know that the Wisconsin Statutes and administrative rules establish time periods within which requests to review department decisions must be filed. To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. Requests for contested case hearings must be made in accordance with ch. NR 2, Wis. Adm. Code. Filing a request for a contested case hearing does not extend the 30 day period for filing a petition for judicial review. For judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you must file your petition with the appropriate circuit court and serve the petition on the department within 30 days after the decision is mailed. A petition for judicial review must name the Department of Natural Resources as the respondent.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

Project Plan Reviewer

Kevin Karpinski
Public Water Engineering Section
Bureau of Drinking Water and Groundwater

For the Secretary

Benjamin M. Mand, P.E.
Public Water Engineering Section
Bureau of Drinking Water and Groundwater

cc: Nate Fosbinder – Water & Sewer Superintendent, Mineral Point (by email)
Andrew Jacque – Water Quality Investigations, Inc., Mount Horeb (by email)
Nathan Wells – DNR, Fitchburg (by email)
Eileen Pierce – DNR, Fitchburg (by email)
Stephanie Gruenloh – DNR, Wastewater, Milwaukee (by email)
PSC – Madison (by email)

Water Quality Investigations

Please prepare a price proposal as generally broken down below for performing all work described in the attached Well Rehabilitation Plan. Final payments will be for actual work performed.

Proposal due date: April 28, 2025.

Base Work Prices

Item	Description	Qty	Unit	Unit Price	Total
1	Step 1 through 3. Project mobilization, initial pump test and pull and inspect pumping equipment	1	L.S.	$ 10,135	$ 10,135
2	Step 1 and 3. Televise well	2	each	$ 1,565	$ 3,130
3	Step 2. Detonation Cord Mechanical Treatment	2	each	$ 7,000	$ 14,000
4	Step 2. Brushing mechanical treatment of the well with acid treatment; bailing	1	L.S.	$ 5,855	$ 5,855
5	Step 4 through 7. Setup and removal of chemical rehabilitation and treatment equipment	1	L.S.	$ 14,255	$ 14,255
6	Step 4. Initial purge of well prior to acid treatment	2	hour	$ 295	$ 590
7	Step 4. Perform acid treatment of well – initial strength treatment	2	each	$ 8,280	$ 16,560
8	Step 4. Perform acid treatment of well – supplemental dose treatment	1	each	$ 3,895	$ 3,895
9	Step 5. Perform chlorine treatment of the well – initial strength treatment	2	each	$ 2,730	$ 5,460
10	Step 5. Perform chlorine treatment of the well – supplemental dose treatment	1	each	$ 1,115	$ 1,115
11	Step 6. Perform chlorine-based treatment of well – initial strength treatment	2	each	$ 6,295	$ 12,590
12	Step 6. Perform chlorine-based treatment of well – supplemental dose treatment	1	each	$ 1,945	$ 1,945
13	Steps 4 thru 6. Intermediate purge	6	each	$ 295	$ 1,770
14	Step 7. Final Purge	1	each	$ 975	$ 975
15	Step 7. Reinstall Owner's pump and equipment, including necessary equipment preparation work	1	L.S.	$ 11,655	$ 11,655
16	Step 7. Final pump test, recycle line reinstallation, final disinfection, and final flushing	1	L.S.	$ 1,760	$ 1,760
17	Step 7. Obtain safe sample and return well to service	1	L.S.	$ 500	$ 500
				Total	$ 106,190.00

Supplemental Item Prices

The following supplemental prices are for additions to or deductions from the work, as needed based on results reported during the rehabilitation process, to replace worn or damaged equipment, or to upgrade the installation.

Item	Description	Qty	Unit	Unit Price
S1	Inhibited HCl added to/subtracted from treatment	1	Gal.	$ 9.45
S2	Sodium Hypochlorite added to/subtracted from treatment	1	Gal.	$ 8.33
S3	Clearitas 101 added to/subtracted from treatment	1	Gal.	$ 28.90
S4	Glycolic acid added to/subtracted from treatment	1	Gal.	$ 52.50
S5	Additional brushing mechanical treatment, 40 passes	1	each	$ 1,000
S6	Replace pump (match existing design)	1	L.S.	$ 19,900
S7	Rebuild existing pump	1	L.S.	$ 6,610
S8	Replace Oil Tube bearing – 2-1/2" x 1-1/2" brass	1	each	$ 220
S9	5-foot section, Schedule 40 threaded and coupled, 8-inch column pipe, epoxy coated inside and outside	1	each	$ 950
S10	10-foot section, Schedule 40 threaded and coupled, 8-inch column pipe, epoxy coated inside and outside	1	each	$ 1,472
S11	5-foot section, Schedule 80 threaded and coupled, 2.5-inch oil tube pipe, epoxy coated inside and outside	1	each	$ 275*
S12	Conversion of pump installation from oil lube to water lube	1	L.S.	$ 13,360

S11* only exterior of oil tube will be epoxy coated due to interior dimensions and threads, oil does provide a slight protective barrier on the steel

Mechanical and Chemical Well Rehabilitation Plan
Mineral Point Well #4, WUWN BF965 (1972 construction, 1985 reconstruction)

April 14, 2025 (Revision 1)

SECTION 1: GENERAL

Scope:

Rehabilitation of the well consists of mechanical treatment followed by chemical treatment. All chemicals used shall be NSF 60 certified. All materials used shall be NSF 61 certified. All work shall be performed in accordance with Wisconsin DNR Regulations and approvals. The scope of work generally consists of the following steps:

1. Initial pump test
2. Pump removal and well component inspection
3. Well televising
4. Mechanical treatment of the well
5. Well televising after mechanical treatment (optional – subject to deletion to meet budget)
6. Acid treatment of the well
7. Chlorine treatment of the well
8. Chlorine-based treatment of the well
9. Intermediate and final purging of treatments from the well
10. Reinstallation of Owner's Pump
11. Final chlorination of the well
12. Perform a post-treatment pump test
13. Recycle line installation
14. Test the well, obtain safe samples, and put the well back into service

Well Details:

1. Pump:
    a. Oil tube line shaft pump, Model Simmons SP10h 11-stage, designed for 500 gpm at 594 feet TDH (rebuilt in 2021).
    b. Motor is 100 hp, 1750 rpm (refurbished in 2021)
    c. Right angle drive backup operation
    d. Stainless steel shaft, 1-1/2 inch diameter
    e. 2-1/2 inch diameter oil tube – 5-foot lengths, threaded and coupled, epoxy coated (replaced in 2021).
2. Column Pipe = 8-inch diameter, epoxy coated (replaced in 2021)
3. Pump Setting = 405 feet
4. Static Water Level = 148 feet (verify)
5. Cased depth
    a. 30-inch steel from surface to 16 feet (temporary outer casing not removed)
    b. 16-inch steel from surface to 163 feet (installed 1972)
    c. 12-inch liner from surface to 401.5 feet (installed 1985)
6. Total well depth = 805 feet
    a. 15-inch diameter open borehole from 402 feet to 635 feet (wider than liner)
    b. 12-inch diameter open borehole from 635 feet to 805 feet **(120 feet of 2" PVC tremie left in well below 662 feet)**
7. Borehole volume = 4,060 gallons
8. Treatment volume = 6,100 gallons (1.5 borehole volumes)

Mechanical Treatment Details:

Initial mechanical treatment of the well occurs prior to chemical treatment to increase the effectiveness of biofilm removal and subsequent chemical treatment. General details of the mechanical treatment step include the following:

1. Detonation cord (DC) mechanical cleaning of the lower borehole.
    a. Perform DC treatment of the borehole from 425 feet (25 feet below the casing) to the bottom.
    b. Use 200 grain detonation cord from 425 feet to 805 feet.
    c. Perform DC treatment twice, sounding the well between each treatment to make sure there is not a bridge in the well.
2. Mechanical brushing of cased region with acid:
    a. Mechanical treatment involves use of a steel-bristle brush that fully contacts the inner circumference of the cased region of the well.
    b. Brush the full depth of casing for a minimum of 40 passes each. A single pass includes one cycle of brushing in the well, from near the top of the casing (10 feet) to the bottom (402 feet) and back to the top.
    c. Add 29 gallons of inhibited NSF 60 20-degree Baume Hydrochloric Acid (31% strength) mixed with 1,400 gallons of water just prior to start of bushing to assist with loosening and removing scale and biofilm in the cased region. Ensure the well house is properly ventilated as chemical treatment may give off a sulfide smell or volatile organic vapors, which may be hazardous to health.
3. Bail debris **and shattered PVC pipe** from well, discharging to a tank or sheeting for solids collection and disposal. Neutralize as necessary using caustic soda. When bailing, operate bailer to prevent issues with the borehole transition from 15-inch diameter to 12-inch diameter at about 635 feet.

Mixing Details:

Install a tremie to the bottom of the well before chemical treatment of the well for use in mixing and monitoring of rehabilitation chemicals. General details of this step include the following:

1. Install a temporary 200 gpm pump in the well, set at about 40 feet below static water level, with 3-inch discharge to the surface.
2. Install a 3-inch tremie from the surface to the bottom of well, which will be used for chemical recirculation in the well. This tremie could also be used for airlifting of debris from the well. The tremie should be made of steel to prevent damage or loss caused by the narrower diameter lower borehole and the crookedness of the well.
3. On the 3-inch surface piping, install a check valve, throttling valve, smooth sample tap, flow meter, and chemical injection taps, then a connection to the tremie to the bottom of the well.
4. When mixing and injecting chemical treatment in the well:
    a. Throttle the flow or operate the temporary pump using a VFD to control flow rate at approximately 175 gpm (mixing rate).
    b. Discharge 150 gpm to the bottom of the well through the tremie.
    c. Free-fall about 25 gpm to above the pump.
    d. Mixing Cycle = 23 minutes (time to turn over one well volume with mixing)

Chemical Treatment Details:

Chemical treatment of the well consists of an *acid treatment* step, *chlorine treatment* step, and a *chlorine-based treatment* step. General details of the chemical treatment steps include the following:

1. Ensure the well house is properly ventilated as chemical treatment may give off a sulfide smell or volatile organic vapors, which may be hazardous to health.

2. Treat 1.5 borehole volumes when treating the entire well to target treatment of the well and nearby aquifer. Chemical injection will be a two-step process:
    a. Inject the first single borehole volume of chemical during mixing of the borehole to achieve the specified concentration over one borehole recirculation time, which is the mixing interval.
    b. Inject the remaining treatment volume of chemical into the well to treat the nearby aquifer with the recirculation pump off, injecting chemical into water added to the well from the system. Add water to the well at the same rate that water was being recirculated in the well (175 gpm).
    c. The chemical injection rate for each chemical for designated mixing rate is equal to the required chemical volume divided by borehole volumes treated divided by the mixing interval.
3. Monitor chemical usage and observations on the **attached data form**.
4. Pending observations from each treatment step, chemical strength may be adjusted for subsequent steps using supplemental prices provided on the bid form to adjust the cost for the applied treatment.

Intermediate Purging Details:

General details of this step include the following:

1. For those steps requiring a purge of the chemical treatment from the well, purge at least five borehole volumes (about 1.7 hours at 200 gpm), to sanitary sewer. Once water clarity improves to a suspended solids concentration of less than 40 mg/L, water can be purged to a grass swale or where authorized by the regulatory agency, neutralizing as necessary.
2. Neutralize acidity, if pH below 6.0 su, with caustic soda.
3. Neutralize remnant free chlorine, if any, with sodium bisulfite or sodium thiosulfate.
4. When purging the well, add 150 gpm of system water to the tremie and free-fall 25 gpm into the well above the pump for the first 30 minutes of purging. This approach will ensure the entire borehole is rapidly purged of remnant chemical and discolored water.
5. Purging shall be in accordance with DNR regulations and the City of Mineral Point WPDES Discharge Permit.

Final Purging Details:

After chemical treatment is complete and the intermediate purge performed, pump the well to waste for 24 hours with Owner's pump reinstalled to a grass swale or storm sewer. Purging shall be in accordance with DNR regulations and the City's WPDES Discharge Permit.

Pump, Column Pipe, Oil Tube and Tail Pipe:

For replacement of the column pipe, oil lube tube and tail pipe, as determined by the inspection report or selected by the Owner, materials shall conform with the following:

1. Column and tail pipe: ASTM A53 Grade B seamless, Schedule 40, 8-inch diameter, interior and exterior of pipe and exterior of couplings epoxy coated in accordance with AWWA C210.
2. Disposal of existing column pipe, oil lube tube and accessories.
3. Pipe thread lubricant shall be fully wetting PTFE, NSF 61 certified, and field applied to both coupling faces to reduce the potential for crevice corrosion.

The oil used for pump tube lubrication shall be an NSF/ANSI Standard 61 approved mineral oil.

Supplemental price for conversion of the pump installation from oil lube to water lube, shall include all costs to perform the following:

1. Remove existing water lube stuffing box and convert to water lube
2. 8" x 2" stainless steel water lube drop-in spider w/ replaceable 1 ½" rubber bearings
3. Brass adapter bushing for oil lube to water conversion

4. Electrical time delay relay, 120 volt solenoid, copper piping and fittings, and relay logic for prelube line installation.
5. Reuse of existing 1 ½" diameter stainless steel shafts

Supplemental price for rebuilding the existing pump shall include all costs to tear down and reassemble the pump with new brass wear rings, new shaft bearings and new impeller skirts trimmed to manufacturer specifications, complete.

SECTION 2 – EXECUTION

Step 1: Initial Pump Test, Pump Pull, Televising, and Geophysical Logging

1. Perform an initial pump test for one hour with the Owner's pump in the well to document initial pumping conditions. Note discharge rate, discharge pressure and drawdown every 5 minutes for the first 15 minutes, then every 15 minutes thereafter.
2. Pull well pump. Collect mineral oil from the oil lube tube and properly dispose of. When pulling pump, prevent mineral oil from entering the well.
3. Inspect discharge fittings, pump, column pipe, couplings, and other related materials for wear and corrosion.
    a. Provide pictures of the column pipe and oil lube tube and fittings, especially below the pumping water level.
    b. Obtain scrapings of the column pipe and ship to WQI for a mineral and biofilm assessment. Discuss with WQI to determine if changes are needed to the treatment process. Assessment of this material will help determine the extent of acid treatment that will be required and the potential for ongoing issues.
    c. Pressure wash column pipe (inside and outside) and oil lube pipe (outside), spiders and pump to remove biofilm and scale and to allow for inspection (unless obviously damaged and in need of replacement).
    d. Inspect equipment. Provide inspection report and recommendations within 3 business days of pump removal for determination of need to replace or rebuild and if the pump install will be converted to water lube.
4. Televise the well to assess/document the current condition of the casing and borehole regions. Video shall be in color format with good focus and clarity to adequately allow determination of scale presence in the cased region, scale coloration and severity, integrity of casing welds and of the casing grout seal, and borehole minerology and borehole accumulations. Contractor to hold the camera stationary while televising to identify natural movement that would indicate fracture flow in the well under static conditions and which direction the flow moves (up, down or cross). Provide a video file in digital format for records.

Step 2: Mechanical Treatment

1. Mechanically treat the well as described in the Mechanical Treatment Details of the General Section.
2. Perform DC treatment prior to mechanical brushing treatment and bailing.
3. After completion of mechanical treatment, install the temporary pump to be used for chemical treatment work as described in Mixing Details in the General Section. Install this pump after Step 3 televising, if required.

Step 3: Televising Post Mechanical Treatment (Optional)

1. If deemed necessary by the Engineer, televise the well to assess/document the condition of the casing and borehole region after completion of the mechanical treatment. Add at least 10,000 gallons of system water to the well prior to televising to provide adequate clarity for assessing the condition of the casing. As needed, add water during televising to provide needed clarity. Video shall be in color format with good

focus and clarity to adequately allow determination of scale presence in cased region, scale coloration and severity, integrity of casing welds and of the casing grout seal, and material left in the bottom of the well.

2. Provide a video file in digital format for records.

Step 4: Acid Treatment Step (minimum 24 hours contact time)

1. Prior to chemical addition, add water to the tremie from the water system at about 200 gpm and pump the well to waste at 200 gpm to clear loose debris and biofilm from the well that was not removed with bailing. Perform this for 2 hours, adding about 24,000 gallons. Discharge this water into the sanitary sewer. If water is still excessively turbid after 2 hours, extend this initial purge for another hour.
2. Chemicals:
    a. NSF 60 20-degree Baume Hydrochloric Acid (HCl) (31% strength) – 9,600 mg/L dose
    b. 70% NSF 60 glycolic acid – 9,600 mg/L dose
    c. Initial strength treatment – pH of about 0.7 su:
        i. 189 gallons of 31% HCl (injection rate = 5.4 gpm into 175 gpm of mixed and added water)
        ii. 84 gallons of 70% glycolic acid (injection rate = 2.4 gpm into mixed and added water)
        iii. 5,827 gallons of well water and supplemental system water
    d. Supplemental strength treatment
        i. 95 gallons of inhibited HCl (injection rate = 4.1 gpm into 175 gpm of mixed water)
        ii. 42 gallons of 70% glycolic acid (injection rate = 1.8 gpm into 175 gpm of mixed water)
3. Add the initial strength treatment to the well. Mix the well continuously during working hours, monitoring pH and odor every 24 minutes of mixing (once per mixing cycle). Let the well sit unmixed overnight. Measure pH using a calibrated pH sensor.
    a. For odor assessment, waft the sample (**don't directly sniff**) to determine if it has a fruity, sweet, musty, pungent, "swimming pool" or metallic odor.
    b. If pH rises above 3 su within the first eight (8) hours of mixing an initial strength treatment, at the time point of pH rise above 3 su, add supplemental treatment over one mixing interval and continue to mix and monitor for an additional 24 hours.
    c. If pH rises above 3 su within the first eight (8) hours of mixing a supplemental treatment, or if the solution becomes excessively dirty, perform an intermediate purge and re-dose the well with a fresh batch of initial strength treatment.
    d. When pH stays below 3 su for 24 hours, treatment is complete. Perform an intermediate purge and neutralize as necessary.

Step 5: Chlorine Treatment Step (minimum 24 hours contact time)

1. Chemicals:
    a. 12.5% strength NSF 60 NaOCl
    b. Initial strength treatment – 3,000 mg/L dose:
        i. 146 gallons of 12.5% NaOCl (injection rate = 4.2 gpm into mixed and added water)
        ii. 5,954 gallons of well water and supplemental system water
    c. Supplemental strength treatment:
        i. 73 gallons of 12.5% NaOCl (injection rate = 3.2 gpm into mixed water)
2. Add initial strength treatment to the well. Mix the well continuously during working hours, monitoring pH, odor, and free and total chlorine residual once per mixing cycle. Measure chlorine residual using a calibrated device or high range and low range test strips to report to the nearest 100 mg/L of total chlorine and free chlorine.

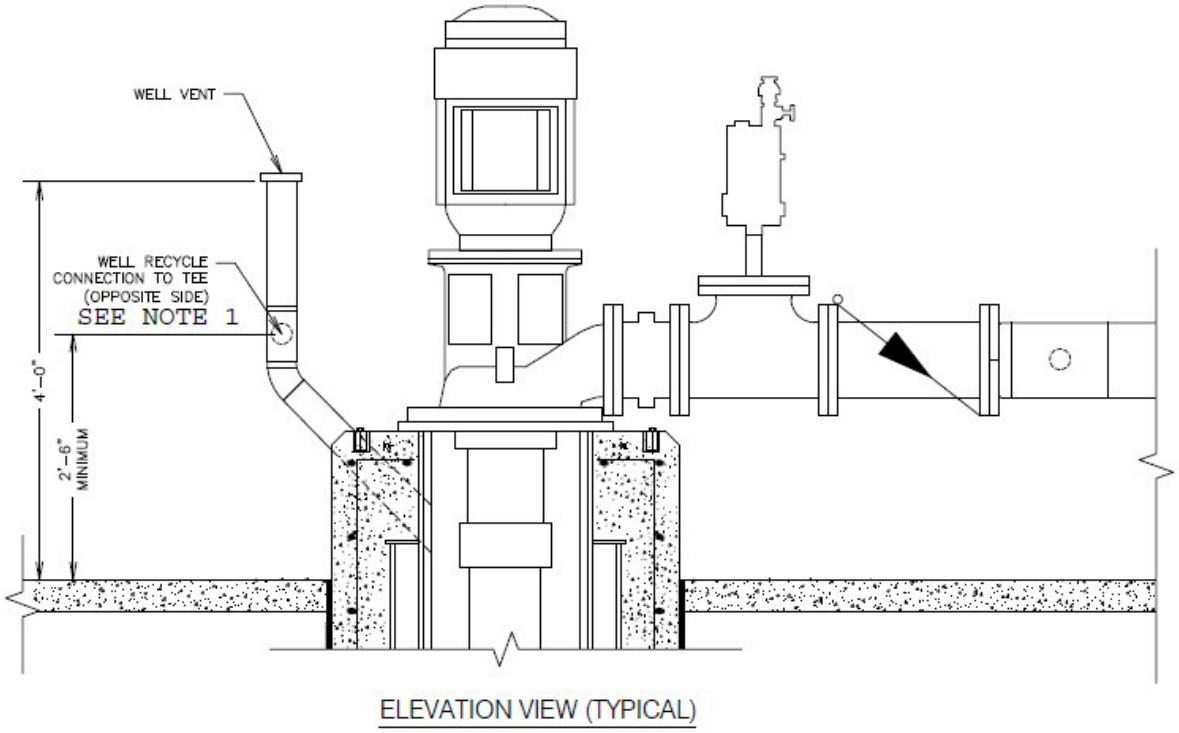
a. For odor assessment, waft the sample (**don't directly sniff**) to determine if it has a fruity, sweet, musty, pungent, "swimming pool", or metallic odor.
b. If free chlorine drops below 300 mg/L within the first four (4) hours of mixing an initial strength treatment:
    i. If no color is present, add an initial strength treatment over one mixing interval.
    ii. If water is yellow or excessively dirty, continue mixing until chlorine is completely consumed and perform an intermediate purge of the treatment from the well. Retreat the well with an initial strength treatment.
c. If free chlorine drops below 300 mg/L within the first eight (8) hours of mixing an initial strength treatment:
    i. If no color is present, add supplemental strength treatment over one mixing interval.
    ii. If water is yellow or excessively dirty, continue mixing until chlorine is completely consumed and perform an intermediate purge of the treatment from the well. Retreat the well with one half of an initial strength treatment, adding the treatment over one mixing interval.
d. When free chlorine stays above 300 mg/L for 24 hours, treatment is complete. Perform an intermediate purge of the well.

Step 6: Chlorine-Based Treatment Step: Chlorine, Glycolic, and Clearitas (minimum 24 hours contact time)

1. Chemicals:
    a. 12.5% NSF 60 NaOCl – 2,000 mg/L dose
    b. Clearitas 101, Blue Earth Products, NSF 60 – 10,000 mg/L dose
    c. 70% NSF 60 glycolic acid – 4,000 mg/L dose
    d. Initial strength treatment – final mixture should have a pH of about 4 su:
        i. 98 gallons of 12.5% NaOCl (injection rate = 2.8 gpm into mixed and added water)
        ii. 35 gallons of 70% glycolic acid (injection rate = 1.0 gpm into mixed and added water)
        iii. 61 gallons Clearitas 101 (injection rate = 1.8 gpm into mixed and added water)
        iv. 5,907 gallons of well water and supplemental system water
    e. Supplemental strength treatment:
        i. 49 gallons of 12.5% NaOCl (injection rate = 2.1 gpm into mixed water)
        ii. 18 gallons of 70% glycolic acid (injection rate = 0.80 gpm into mixed water)
2. Add initial strength treatment to the well. Mix the well continuously during working hours, monitoring pH, odor, and free and total chlorine residual once per mixing cycle. Measure pH using a calibrated pH sensor. Measure chlorine residual using a calibrated device or high range and low range test strips to report to the nearest 100 mg/L of total chlorine and free chlorine.
    a. For odor assessment, waft the sample (**don't directly sniff**) to determine if it has a fruity, sweet, musty, pungent, "swimming pool" or metallic odor.
    b. If free chlorine drops below 300 mg/L within the first 8 hours of mixing an initial strength treatment:
        i. If pH is below 6 su and minimal or no color is present, add supplemental strength treatment over one mixing interval.
        ii. If pH is above 6 su or the water is yellow or excessively dirty, continue mixing until chlorine is completely consumed and perform an intermediate purge of the treatment from the well. Retreat the well with an initial strength treatment.
    c. When free chlorine stays above 300 mg/L for 24 hours, treatment is complete. Perform an intermediate purge of the well prior to second mechanical treatment and/or reinstallation of the Owner's pump.

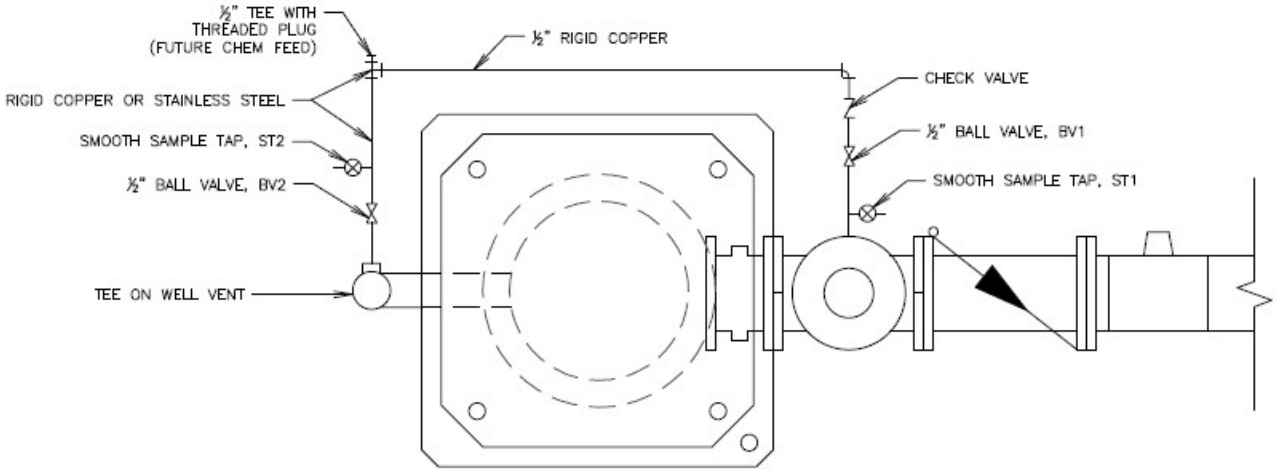
Step 7: Final Disinfection, Reinstallation of Owner's Pump, Casing Modification, Final Pump Test, and Recycle Line Installation

1. Remove the temporary pump.
2. Prepare equipment for reinstallation, including the following:
    a. straighten existing line shaft
    b. rebuild stuffing box on discharge head
    c. rebuild pump
    d. convert pump installation to water lubrication
3. Perform the following items to bring the well back online. Be sure to follow local regulations/requirements and conditions in the DNR approval.
    a. Chlorinate the well to 100 mg/L for final chlorination before reinstallation of Owner's pump. Contractor to flash mix sodium hypochlorite into water added to the well or use a combination of granular and tablet calcium hypochlorite to chlorinate the entire water column in the well.
    b. Reinstall equipment in well.
        i. Spray pumping equipment and piping with a 200 mg/l chlorine solution
        ii. Reinstall pump with existing motor, discharge head and shafting. When reinstalling pump and column pipe, fully tape the exterior of the pipe from 6-inch below to 6-inches above each coupling (column and oil lube) using a double layer of wide PVC tape to cover the joint and any defects in the epoxy coating.
        iii. Install two new airlines (one rubber and one polyethylene), taped at each joint and mid length of each column pipe section.
        iv. Reinstall existing transducer tube and transducer (if present).
        v. Install a new ½" copper line with ball valve between the existing sample tap and a new well vent connection for the well water recycle line (see **Figure 1**). Transition to 3/8" soft copper immediately before the discharge head connection.
        vi. Install 3/8" soft copper tubing for the well water recycle line through the new well vent connection (see **Figure 2**). Insert recycle line through a new watertight grommet.
        vii. Provide sanitary seal of discharge head to pump base.
    c. Reinstall right angle drive and motor.
    d. After the pump is reinstalled, surge the well three times to verify the well is chlorinated to 100 mg/L, supplementing chlorine as needed to achieve this dose.
    e. Let the well sit for 24 hours after final chlorination.
    f. Clean well house to as good or better condition that existed prior to start of work.
4. After the 24-hour wait period, pump the well to waste for a minimum of 24 hours to a grassed swale (final purge), neutralize as necessary.
5. Perform final pump test for one hour at beginning of final purge to document post rehabilitation pumping conditions. Note discharge rate and drawdown every 5 minutes for the first 15 minutes, and then every 15 minutes thereafter.
6. The first bacteria sample can be collected no sooner than 30 minutes after chlorine is no longer detectible. Collect two safe samples at least 8 hours apart before returning well back to service.



ELEVATION VIEW (TYPICAL)

NOTE 1: REPLACE TEE WITH A WYE FITTING. TRANSITION TO 3/8" COPPER TUBING AT WYE FITTING AND INSERT TUBING INTO WYE FITTING TO GET TUBING ABOUT 5 FEET BELOW DISCHARGE HEAD. SEAL TUBING AT WYE WITH A COMPRESSION FITTING. IF NO EXTERNAL VENT, CONNECT RECYCLE LINE TO SPARE FITTING ON DICHARGE HEAD WITH NO VENT.



PLAN VIEW (TYPICAL)

Figure 1. Generic well water recycle line detail.

Figure 2. Well water recycle line connection detail/well water recycle line connection detail with existing sample tap.

Water Quality Investigations

Well Rehabilitation Data Sheet

Project:

Contractor:

Employee:

Brushing observations:

Treatment Step (acid/chlorine/ chlorine-based)	Dose step (initial, supplemental, or full initial re-dose)	Date	Time	hours of contact up to "Time"	pH	Free Chlorine (mg/L)	Odor/Color/Notes (describe: musty, earthy, pungent, egg, sweet, etc)

April 28, 2025

City of Mineral Point
Attn: Nate Fosbinder
137 High St.
Mineral Point, WI 53565

Re: Well #4 Rehabilitation

Nate,

Peerless Well & Pump would like to thank you for the opportunity to submit a proposal on rehabilitation of Well #4 as per the specifications prepared by Water Quality Investigations (WQI). Well #4 is an oil lubricated line shaft pump assembly with 405 feet of 8-inch column pipe, 1-1/2-inch shafting, and 2-1/2-inch oil tube that was last pulled by Peerless in 2021.

This pump has historically been pulled every 4-5 years, due to this wells issue with stray voltage causing premature deterioration of the pumping equipment. After only 3 years the pump has seen a significant drop in production, and it is our concern that the stray voltage is the reason for this issue again. In 2021 The city did work with Alliant Energy and other professionals to solve this issue. Peerless installed zinc sleeves before the pump was installed to help in the case of stray voltage. The zinc should act as a sacrificial metal and save the pipe from being attacked. This does work well in many scenarios, but each scenario is different, and it doesn't always solve the problem.

The proposed scope of work and associated pricing is attached based on the WQI specifications.

After reviewing this proposal, should you have any questions or concerns, or if there is any other way we can be of assistance to your community, please feel free to contact me at your convenience. We appreciate this opportunity to provide you with this proposal and look forward to the opportunity to deliver the City of Mineral Point continued expert service on this project.

Peerless Well & Pump

Ross Griffin

Ross Griffin
563-543-5803

Water Quality Investigations

Please prepare a price proposal as generally broken down below for performing all work described in the attached Well Rehabilitation Plan. Final payments will be for actual work performed.

Proposal due date: April 28, 2025.

Base Work Prices

Item	Description	Qty	Unit	Unit Price	Total
1	Step 1 through 3. Project mobilization, initial pump test and pull and inspect pumping equipment	1	L.S.	$ 28,850.00	$ 28,850.00
2	Step 1 and 3. Televise well	2	each	$ 1,530.00	$ $3,060.00
3	Step 2. Detonation Cord Mechanical Treatment	2	each	$ 3,925.00	$ 7,850.00
4	Step 2. Brushing mechanical treatment of the well with acid treatment; bailing	1	L.S.	$ 4,930.00	$ 4,930.00
5	Step 4 through 7. Setup and removal of chemical rehabilitation and treatment equipment	1	L.S.	$ 7,580.00	$ 7,580.00
6	Step 4. Initial purge of well prior to acid treatment	2	hour	$ 230.00	$ 460.00
7	Step 4. Perform acid treatment of well – initial strength treatment	2	each	$ 6,725.00	$ 13,450.00
8	Step 4. Perform acid treatment of well – supplemental dose treatment	1	each	$ 3,370.00	$ 3,370.00
9	Step 5. Perform chlorine treatment of the well – initial strength treatment	2	each	$ 2,550.00	$ 5,100.00
10	Step 5. Perform chlorine treatment of the well – supplemental dose treatment	1	each	$ 1,150.00	$ 1,150.00
11	Step 6. Perform chlorine-based treatment of well – initial strength treatment	2	each	$ 5,160.00	$ 10,320.00
12	Step 6. Perform chlorine-based treatment of well – supplemental dose treatment	1	each	$ 1,750.00	$ 1,750.00
13	Steps 4 thru 6. Intermediate purge	6	each	$ 460.00	$ 2,760.00
14	Step 7. Final Purge	1	each	$ 600.00	$ 600.00
15	Step 7. Reinstall Owner's pump and equipment, including necessary equipment preparation work	1	L.S.	$ 15,560.00	$ 15,560.00
16	Step 7. Final pump test, recycle line reinstallation, final disinfection, and final flushing	1	L.S.	$ 1,130.00	$ 1,130.00
17	Step 7. Obtain safe sample and return well to service	1	L.S.	$ 60.00	$ 60.00
				Total	$ 107,980.00

Supplemental Item Prices

The following supplemental prices are for additions to or deductions from the work, as needed based on results reported during the rehabilitation process, to replace worn or damaged equipment, or to upgrade the installation.

Item	Description	Qty	Unit	Unit Price
S1	Inhibited HCl added to/subtracted from treatment	1	Gal.	$ 10.00
S2	Sodium Hypochlorite added to/subtracted from treatment	1	Gal.	$ 10.00
S3	Clearitas 101 added to/subtracted from treatment	1	Gal.	$ 20.00
S4	Glycolic acid added to/subtracted from treatment	1	Gal.	$ 40.00
S5	Additional brushing mechanical treatment, 40 passes	1	each	$ 3,440.00
S6	Replace pump (match existing design)	1	L.S.	$ 16,330.00
S7	Rebuild existing pump	1	L.S.	$ 6,310.00
S8	Replace Oil Tube bearing – 2-1/2" x 1-1/2" brass	1	each	$ 120.00
S9	5-foot section, Schedule 40 threaded and coupled, 8-inch column pipe, epoxy coated inside and outside	1	each	$ 460.00
S10	10-foot section, Schedule 40 threaded and coupled, 8-inch column pipe, epoxy coated inside and outside	1	each	$ 850.00
S11	5-foot section, Schedule 80 threaded and coupled, 2.5-inch oil tube pipe, epoxy coated inside and outside	1	each	$ 260.00
S12	Conversion of pump installation from oil lube to water lube	1	L.S.	$ 30,460.00

Mechanical and Chemical Well Rehabilitation Plan
Mineral Point Well #4, WUWN BF965 (1972 construction, 1985 reconstruction)

April 14, 2025 (Revision 1)

SECTION 1: GENERAL

Scope:

Rehabilitation of the well consists of mechanical treatment followed by chemical treatment. All chemicals used shall be NSF 60 certified. All materials used shall be NSF 61 certified. All work shall be performed in accordance with Wisconsin DNR Regulations and approvals. The scope of work generally consists of the following steps:

1. Initial pump test
2. Pump removal and well component inspection
3. Well televising
4. Mechanical treatment of the well
5. Well televising after mechanical treatment (optional – subject to deletion to meet budget)
6. Acid treatment of the well
7. Chlorine treatment of the well
8. Chlorine-based treatment of the well
9. Intermediate and final purging of treatments from the well
10. Reinstallation of Owner's Pump
11. Final chlorination of the well
12. Perform a post-treatment pump test
13. Recycle line installation
14. Test the well, obtain safe samples, and put the well back into service

Well Details:

1. Pump:
    a. Oil tube line shaft pump, Model Simmons SP10h 11-stage, designed for 500 gpm at 594 feet TDH (rebuilt in 2021).
    b. Motor is 100 hp, 1750 rpm (refurbished in 2021)
    c. Right angle drive backup operation
    d. Stainless steel shaft, 1-1/2 inch diameter
    e. 2-1/2 inch diameter oil tube – 5-foot lengths, threaded and coupled, epoxy coated (replaced in 2021).
2. Column Pipe = 8-inch diameter, epoxy coated (replaced in 2021)
3. Pump Setting = 405 feet
4. Static Water Level = 148 feet (verify)
5. Cased depth
    a. 30-inch steel from surface to 16 feet (temporary outer casing not removed)
    b. 16-inch steel from surface to 163 feet (installed 1972)
    c. 12-inch liner from surface to 401.5 feet (installed 1985)
6. Total well depth = 805 feet
    a. 15-inch diameter open borehole from 402 feet to 635 feet (wider than liner)
    b. 12-inch diameter open borehole from 635 feet to 805 feet **(120 feet of 2" PVC tremie left in well below 662 feet)**
7. Borehole volume = 4,060 gallons
8. Treatment volume = 6,100 gallons (1.5 borehole volumes)

Mechanical Treatment Details:

Initial mechanical treatment of the well occurs prior to chemical treatment to increase the effectiveness of biofilm removal and subsequent chemical treatment. General details of the mechanical treatment step include the following:

1. Detonation cord (DC) mechanical cleaning of the lower borehole.
    a. Perform DC treatment of the borehole from 425 feet (25 feet below the casing) to the bottom.
    b. Use 200 grain detonation cord from 425 feet to 805 feet.
    c. Perform DC treatment twice, sounding the well between each treatment to make sure there is not a bridge in the well.
2. Mechanical brushing of cased region with acid:
    a. Mechanical treatment involves use of a steel-bristle brush that fully contacts the inner circumference of the cased region of the well.
    b. Brush the full depth of casing for a minimum of 40 passes each. A single pass includes one cycle of brushing in the well, from near the top of the casing (10 feet) to the bottom (402 feet) and back to the top.
    c. Add 29 gallons of inhibited NSF 60 20-degree Baume Hydrochloric Acid (31% strength) mixed with 1,400 gallons of water just prior to start of bushing to assist with loosening and removing scale and biofilm in the cased region. Ensure the well house is properly ventilated as chemical treatment may give off a sulfide smell or volatile organic vapors, which may be hazardous to health.
3. Bail debris **and shattered PVC pipe** from well, discharging to a tank or sheeting for solids collection and disposal. Neutralize as necessary using caustic soda. When bailing, operate bailer to prevent issues with the borehole transition from 15-inch diameter to 12-inch diameter at about 635 feet.

Mixing Details:

Install a tremie to the bottom of the well before chemical treatment of the well for use in mixing and monitoring of rehabilitation chemicals. General details of this step include the following:

1. Install a temporary 200 gpm pump in the well, set at about 40 feet below static water level, with 3-inch discharge to the surface.
2. Install a 3-inch tremie from the surface to the bottom of well, which will be used for chemical recirculation in the well. This tremie could also be used for airlifting of debris from the well. The tremie should be made of steel to prevent damage or loss caused by the narrower diameter lower borehole and the crookedness of the well.
3. On the 3-inch surface piping, install a check valve, throttling valve, smooth sample tap, flow meter, and chemical injection taps, then a connection to the tremie to the bottom of the well.
4. When mixing and injecting chemical treatment in the well:
    a. Throttle the flow or operate the temporary pump using a VFD to control flow rate at approximately 175 gpm (mixing rate).
    b. Discharge 150 gpm to the bottom of the well through the tremie.
    c. Free-fall about 25 gpm to above the pump.
    d. Mixing Cycle = 23 minutes (time to turn over one well volume with mixing)

Chemical Treatment Details:

Chemical treatment of the well consists of an *acid treatment* step, *chlorine treatment* step, and a *chlorine-based treatment* step. General details of the chemical treatment steps include the following:

1. Ensure the well house is properly ventilated as chemical treatment may give off a sulfide smell or volatile organic vapors, which may be hazardous to health.

2. Treat 1.5 borehole volumes when treating the entire well to target treatment of the well and nearby aquifer. Chemical injection will be a two-step process:
    a. Inject the first single borehole volume of chemical during mixing of the borehole to achieve the specified concentration over one borehole recirculation time, which is the mixing interval.
    b. Inject the remaining treatment volume of chemical into the well to treat the nearby aquifer with the recirculation pump off, injecting chemical into water added to the well from the system. Add water to the well at the same rate that water was being recirculated in the well (175 gpm).
    c. The chemical injection rate for each chemical for designated mixing rate is equal to the required chemical volume divided by borehole volumes treated divided by the mixing interval.
3. Monitor chemical usage and observations on the **attached data form**.
4. Pending observations from each treatment step, chemical strength may be adjusted for subsequent steps using supplemental prices provided on the bid form to adjust the cost for the applied treatment.

Intermediate Purging Details:

General details of this step include the following:

1. For those steps requiring a purge of the chemical treatment from the well, purge at least five borehole volumes (about 1.7 hours at 200 gpm), to sanitary sewer. Once water clarity improves to a suspended solids concentration of less than 40 mg/L, water can be purged to a grass swale or where authorized by the regulatory agency, neutralizing as necessary.
2. Neutralize acidity, if pH below 6.0 su, with caustic soda.
3. Neutralize remnant free chlorine, if any, with sodium bisulfite or sodium thiosulfate.
4. When purging the well, add 150 gpm of system water to the tremie and free-fall 25 gpm into the well above the pump for the first 30 minutes of purging. This approach will ensure the entire borehole is rapidly purged of remnant chemical and discolored water.
5. Purging shall be in accordance with DNR regulations and the City of Mineral Point WPDES Discharge Permit.

Final Purging Details:

After chemical treatment is complete and the intermediate purge performed, pump the well to waste for 24 hours with Owner's pump reinstalled to a grass swale or storm sewer. Purging shall be in accordance with DNR regulations and the City's WPDES Discharge Permit.

Pump, Column Pipe, Oil Tube and Tail Pipe:

For replacement of the column pipe, oil lube tube and tail pipe, as determined by the inspection report or selected by the Owner, materials shall conform with the following:

1. Column and tail pipe: ASTM A53 Grade B seamless, Schedule 40, 8-inch diameter, interior and exterior of pipe and exterior of couplings epoxy coated in accordance with AWWA C210.
2. Disposal of existing column pipe, oil lube tube and accessories.
3. Pipe thread lubricant shall be fully wetting PTFE, NSF 61 certified, and field applied to both coupling faces to reduce the potential for crevice corrosion.

The oil used for pump tube lubrication shall be an NSF/ANSI Standard 61 approved mineral oil.

Supplemental price for conversion of the pump installation from oil lube to water lube, shall include all costs to perform the following:

1. Remove existing water lube stuffing box and convert to water lube
2. 8" x 2" stainless steel water lube drop-in spider w/ replaceable 1 ½" rubber bearings
3. Brass adapter bushing for oil lube to water conversion

4. Electrical time delay relay, 120 volt solenoid, copper piping and fittings, and relay logic for prelube line installation.
5. Reuse of existing 1 ½" diameter stainless steel shafts

Supplemental price for rebuilding the existing pump shall include all costs to tear down and reassemble the pump with new brass wear rings, new shaft bearings and new impeller skirts trimmed to manufacturer specifications, complete.

SECTION 2 – EXECUTION

Step 1: Initial Pump Test, Pump Pull, Televising, and Geophysical Logging

1. Perform an initial pump test for one hour with the Owner's pump in the well to document initial pumping conditions. Note discharge rate, discharge pressure and drawdown every 5 minutes for the first 15 minutes, then every 15 minutes thereafter.
2. Pull well pump. Collect mineral oil from the oil lube tube and properly dispose of. When pulling pump, prevent mineral oil from entering the well.
3. Inspect discharge fittings, pump, column pipe, couplings, and other related materials for wear and corrosion.
    a. Provide pictures of the column pipe and oil lube tube and fittings, especially below the pumping water level.
    b. Obtain scrapings of the column pipe and ship to WQI for a mineral and biofilm assessment. Discuss with WQI to determine if changes are needed to the treatment process. Assessment of this material will help determine the extent of acid treatment that will be required and the potential for ongoing issues.
    c. Pressure wash column pipe (inside and outside) and oil lube pipe (outside), spiders and pump to remove biofilm and scale and to allow for inspection (unless obviously damaged and in need of replacement).
    d. Inspect equipment. Provide inspection report and recommendations within 3 business days of pump removal for determination of need to replace or rebuild and if the pump install will be converted to water lube.
4. Televise the well to assess/document the current condition of the casing and borehole regions. Video shall be in color format with good focus and clarity to adequately allow determination of scale presence in the cased region, scale coloration and severity, integrity of casing welds and of the casing grout seal, and borehole minerology and borehole accumulations. Contractor to hold the camera stationary while televising to identify natural movement that would indicate fracture flow in the well under static conditions and which direction the flow moves (up, down or cross). Provide a video file in digital format for records.

Step 2: Mechanical Treatment

1. Mechanically treat the well as described in the Mechanical Treatment Details of the General Section.
2. Perform DC treatment prior to mechanical brushing treatment and bailing.
3. After completion of mechanical treatment, install the temporary pump to be used for chemical treatment work as described in Mixing Details in the General Section. Install this pump after Step 3 televising, if required.

Step 3: Televising Post Mechanical Treatment (Optional)

1. If deemed necessary by the Engineer, televise the well to assess/document the condition of the casing and borehole region after completion of the mechanical treatment. Add at least 10,000 gallons of system water to the well prior to televising to provide adequate clarity for assessing the condition of the casing. As needed, add water during televising to provide needed clarity. Video shall be in color format with good

focus and clarity to adequately allow determination of scale presence in cased region, scale coloration and severity, integrity of casing welds and of the casing grout seal, and material left in the bottom of the well.

2. Provide a video file in digital format for records.

Step 4: Acid Treatment Step (minimum 24 hours contact time)

1. Prior to chemical addition, add water to the tremie from the water system at about 200 gpm and pump the well to waste at 200 gpm to clear loose debris and biofilm from the well that was not removed with bailing. Perform this for 2 hours, adding about 24,000 gallons. Discharge this water into the sanitary sewer. If water is still excessively turbid after 2 hours, extend this initial purge for another hour.
2. Chemicals:
    a. NSF 60 20-degree Baume Hydrochloric Acid (HCl) (31% strength) – 9,600 mg/L dose
    b. 70% NSF 60 glycolic acid – 9,600 mg/L dose
    c. Initial strength treatment – pH of about 0.7 su:
        i. 189 gallons of 31% HCl (injection rate = 5.4 gpm into 175 gpm of mixed and added water)
        ii. 84 gallons of 70% glycolic acid (injection rate = 2.4 gpm into mixed and added water)
        iii. 5,827 gallons of well water and supplemental system water
    d. Supplemental strength treatment
        i. 95 gallons of inhibited HCl (injection rate = 4.1 gpm into 175 gpm of mixed water)
        ii. 42 gallons of 70% glycolic acid (injection rate = 1.8 gpm into 175 gpm of mixed water)
3. Add the initial strength treatment to the well. Mix the well continuously during working hours, monitoring pH and odor every 24 minutes of mixing (once per mixing cycle). Let the well sit unmixed overnight. Measure pH using a calibrated pH sensor.
    a. For odor assessment, waft the sample (**don't directly sniff**) to determine if it has a fruity, sweet, musty, pungent, "swimming pool" or metallic odor.
    b. If pH rises above 3 su within the first eight (8) hours of mixing an initial strength treatment, at the time point of pH rise above 3 su, add supplemental treatment over one mixing interval and continue to mix and monitor for an additional 24 hours.
    c. If pH rises above 3 su within the first eight (8) hours of mixing a supplemental treatment, or if the solution becomes excessively dirty, perform an intermediate purge and re-dose the well with a fresh batch of initial strength treatment.
    d. When pH stays below 3 su for 24 hours, treatment is complete. Perform an intermediate purge and neutralize as necessary.

Step 5: Chlorine Treatment Step (minimum 24 hours contact time)

1. Chemicals:
    a. 12.5% strength NSF 60 NaOCl
    b. Initial strength treatment – 3,000 mg/L dose:
        i. 146 gallons of 12.5% NaOCl (injection rate = 4.2 gpm into mixed and added water)
        ii. 5,954 gallons of well water and supplemental system water
    c. Supplemental strength treatment:
        i. 73 gallons of 12.5% NaOCl (injection rate = 3.2 gpm into mixed water)
2. Add initial strength treatment to the well. Mix the well continuously during working hours, monitoring pH, odor, and free and total chlorine residual once per mixing cycle. Measure chlorine residual using a calibrated device or high range and low range test strips to report to the nearest 100 mg/L of total chlorine and free chlorine.

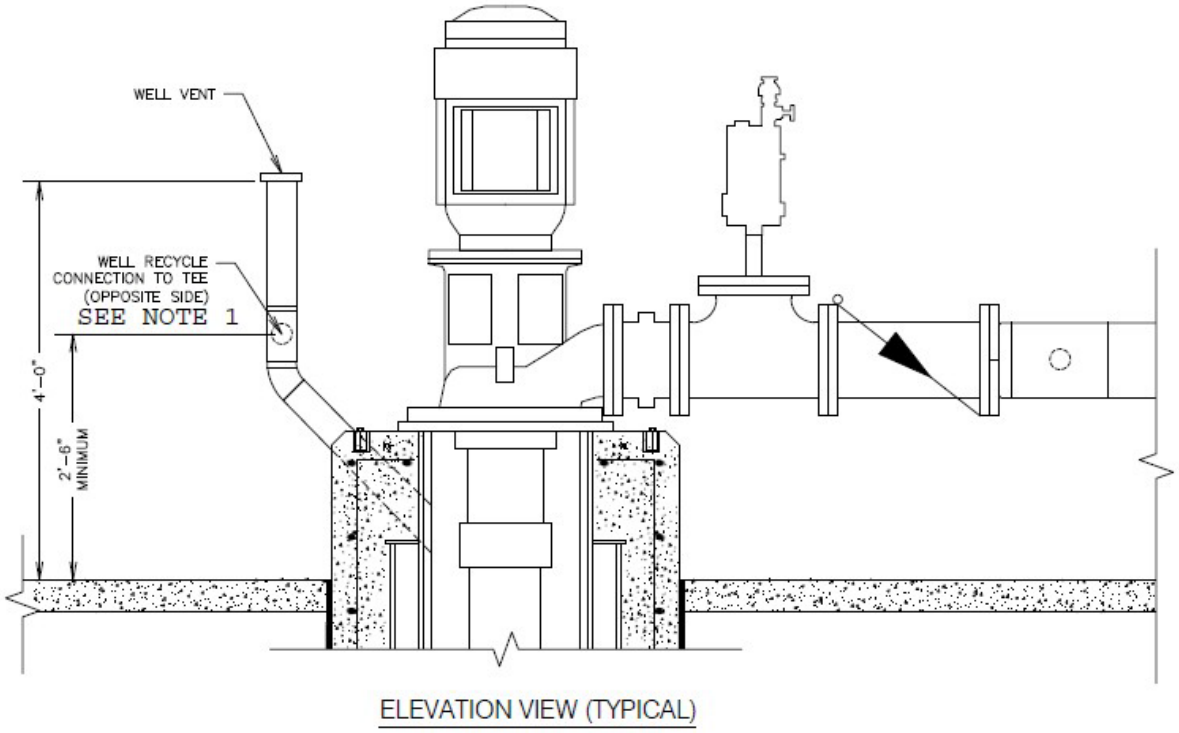
a. For odor assessment, waft the sample (**don't directly sniff**) to determine if it has a fruity, sweet, musty, pungent, "swimming pool", or metallic odor.
b. If free chlorine drops below 300 mg/L within the first four (4) hours of mixing an initial strength treatment:
    i. If no color is present, add an initial strength treatment over one mixing interval.
    ii. If water is yellow or excessively dirty, continue mixing until chlorine is completely consumed and perform an intermediate purge of the treatment from the well. Retreat the well with an initial strength treatment.
c. If free chlorine drops below 300 mg/L within the first eight (8) hours of mixing an initial strength treatment:
    i. If no color is present, add supplemental strength treatment over one mixing interval.
    ii. If water is yellow or excessively dirty, continue mixing until chlorine is completely consumed and perform an intermediate purge of the treatment from the well. Retreat the well with one half of an initial strength treatment, adding the treatment over one mixing interval.
d. When free chlorine stays above 300 mg/L for 24 hours, treatment is complete. Perform an intermediate purge of the well.

Step 6: Chlorine-Based Treatment Step: Chlorine, Glycolic, and Clearitas (minimum 24 hours contact time)

1. Chemicals:
    a. 12.5% NSF 60 NaOCl – 2,000 mg/L dose
    b. Clearitas 101, Blue Earth Products, NSF 60 – 10,000 mg/L dose
    c. 70% NSF 60 glycolic acid – 4,000 mg/L dose
    d. Initial strength treatment – final mixture should have a pH of about 4 su:
        i. 98 gallons of 12.5% NaOCl (injection rate = 2.8 gpm into mixed and added water)
        ii. 35 gallons of 70% glycolic acid (injection rate = 1.0 gpm into mixed and added water)
        iii. 61 gallons Clearitas 101 (injection rate = 1.8 gpm into mixed and added water)
        iv. 5,907 gallons of well water and supplemental system water
    e. Supplemental strength treatment:
        i. 49 gallons of 12.5% NaOCl (injection rate = 2.1 gpm into mixed water)
        ii. 18 gallons of 70% glycolic acid (injection rate = 0.80 gpm into mixed water)
2. Add initial strength treatment to the well. Mix the well continuously during working hours, monitoring pH, odor, and free and total chlorine residual once per mixing cycle. Measure pH using a calibrated pH sensor. Measure chlorine residual using a calibrated device or high range and low range test strips to report to the nearest 100 mg/L of total chlorine and free chlorine.
    a. For odor assessment, waft the sample (**don't directly sniff**) to determine if it has a fruity, sweet, musty, pungent, "swimming pool" or metallic odor.
    b. If free chlorine drops below 300 mg/L within the first 8 hours of mixing an initial strength treatment:
        i. If pH is below 6 su and minimal or no color is present, add supplemental strength treatment over one mixing interval.
        ii. If pH is above 6 su or the water is yellow or excessively dirty, continue mixing until chlorine is completely consumed and perform an intermediate purge of the treatment from the well. Retreat the well with an initial strength treatment.
    c. When free chlorine stays above 300 mg/L for 24 hours, treatment is complete. Perform an intermediate purge of the well prior to second mechanical treatment and/or reinstallation of the Owner's pump.

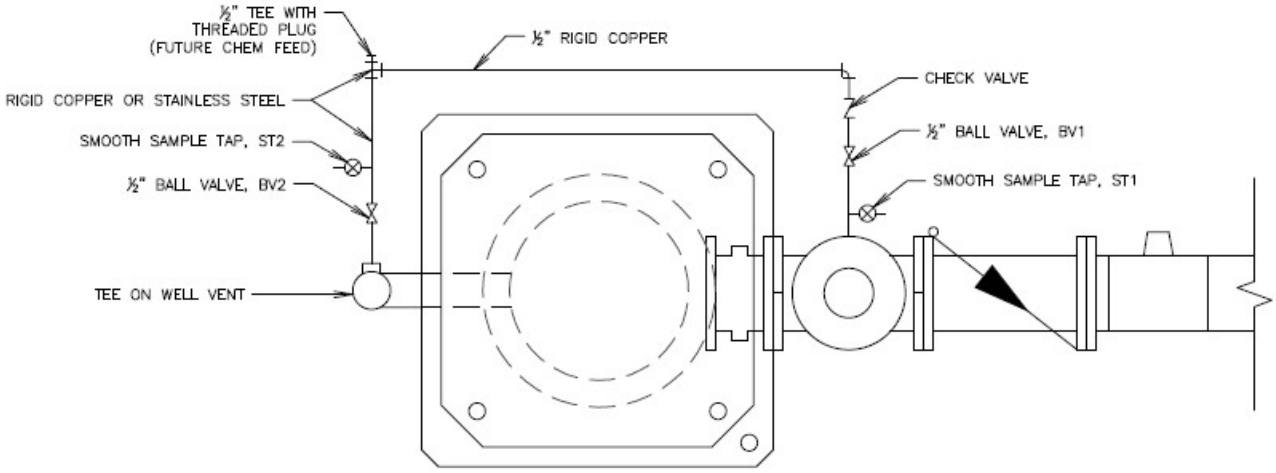
Step 7: Final Disinfection, Reinstallation of Owner's Pump, Casing Modification, Final Pump Test, and Recycle Line Installation

1. Remove the temporary pump.
2. Prepare equipment for reinstallation, including the following:
    a. straighten existing line shaft
    b. rebuild stuffing box on discharge head
    c. rebuild pump
    d. convert pump installation to water lubrication
3. Perform the following items to bring the well back online. Be sure to follow local regulations/requirements and conditions in the DNR approval.
    a. Chlorinate the well to 100 mg/L for final chlorination before reinstallation of Owner's pump. Contractor to flash mix sodium hypochlorite into water added to the well or use a combination of granular and tablet calcium hypochlorite to chlorinate the entire water column in the well.
    b. Reinstall equipment in well.
        i. Spray pumping equipment and piping with a 200 mg/l chlorine solution
        ii. Reinstall pump with existing motor, discharge head and shafting. When reinstalling pump and column pipe, fully tape the exterior of the pipe from 6-inch below to 6-inches above each coupling (column and oil lube) using a double layer of wide PVC tape to cover the joint and any defects in the epoxy coating.
        iii. Install two new airlines (one rubber and one polyethylene), taped at each joint and mid length of each column pipe section.
        iv. Reinstall existing transducer tube and transducer (if present).
        v. Install a new ½" copper line with ball valve between the existing sample tap and a new well vent connection for the well water recycle line (see **Figure 1**). Transition to 3/8" soft copper immediately before the discharge head connection.
        vi. Install 3/8" soft copper tubing for the well water recycle line through the new well vent connection (see **Figure 2**). Insert recycle line through a new watertight grommet.
        vii. Provide sanitary seal of discharge head to pump base.
    c. Reinstall right angle drive and motor.
    d. After the pump is reinstalled, surge the well three times to verify the well is chlorinated to 100 mg/L, supplementing chlorine as needed to achieve this dose.
    e. Let the well sit for 24 hours after final chlorination.
    f. Clean well house to as good or better condition that existed prior to start of work.
4. After the 24-hour wait period, pump the well to waste for a minimum of 24 hours to a grassed swale (final purge), neutralize as necessary.
5. Perform final pump test for one hour at beginning of final purge to document post rehabilitation pumping conditions. Note discharge rate and drawdown every 5 minutes for the first 15 minutes, and then every 15 minutes thereafter.
6. The first bacteria sample can be collected no sooner than 30 minutes after chlorine is no longer detectible. Collect two safe samples at least 8 hours apart before returning well back to service.



ELEVATION VIEW (TYPICAL)

NOTE 1: REPLACE TEE WITH A WYE FITTING. TRANSITION TO 3/8" COPPER TUBING AT WYE FITTING AND INSERT TUBING INTO WYE FITTING TO GET TUBING ABOUT 5 FEET BELOW DISCHARGE HEAD. SEAL TUBING AT WYE WITH A COMPRESSION FITTING. IF NO EXTERNAL VENT, CONNECT RECYCLE LINE TO SPARE FITTING ON DICHARGE HEAD WITH NO VENT.



PLAN VIEW (TYPICAL)

Figure 1. Generic well water recycle line detail.

Figure 2. Well water recycle line connection detail/well water recycle line connection detail with existing sample tap.

Water Quality Investigations

Well Rehabilitation Data Sheet

Project:

Contractor:

Employee:

Brushing observations:

Treatment Step (acid/chlorine/ chlorine-based)	Dose step (initial, supplemental, or full initial re-dose)	Date	Time	hours of contact up to "Time"	pH	Free Chlorine (mg/L)	Odor/Color/Notes (describe: musty, earthy, pungent, egg, sweet, etc)

Water Quality Investigations

April 23, 2025

Nate Fosbinder
City of Mineral Point - Utilities

SUBJECT: Mineral Point Well 3 – Preparation of Rehabilitation Plan

Background
An abbreviated assessment of Well 3 was performed as part of the Well 4 investigation. Data from the assessment show that well 3 would benefit from chemical rehabilitation.

Proposal
We offer the following proposal to assist Mineral Point Utilities with the rehabilitation of Well 3:

1. Task 1: Well Rehabilitation. Work for this item includes the following:
    a. Development of a well specific rehabilitation plan based on sample data. The plan would be prepared for rehabilitation of the well with the well pump removed.
    b. Plan would be written in a format to allow Mineral Point Utilities to obtain quotes for the work.
    c. Well rehabilitation plan would be submitted by WQI to the WDNR for approval.
    d. Work by the contractor would be monitored remotely by WQI during the rehabilitation process, including teleconferences as needed with the contractor and Mineral Point Utilities staff.
    e. Assessment of televising data, including review of the well video for the presence of biofilm and/or defects and preparation of a written report.
    f. Costs for the above would not exceed $5,660. These costs do not include bidding services or preparation of a formal bid package. This item would be billed on a time and material basis.

2. Task 2: Post Rehabilitation Well Assessment and Maintenance Plan. Work for this item includes the following:
    a. Assess two samples from the well to document after rehabilitation conditions.
    b. Prepare an ongoing well maintenance plan for use by Mineral Point Utilities to optimize water quality and production from the well (can be used as a basis for other wells in the system).
    c. Cost for the above would not exceed $5,179. Work would be billed on a time and material basis. Samples would be collected by Utilities staff in kits provided by WQI.

WQI would invoice for work performed on a monthly basis with payment due within 30 days of invoice.

We appreciate the opportunity to submit this proposal and look forward to working with you. If this proposal is agreeable, please sign below, indicate with a checkmark which tasks you would like us to perform and return with billing information for establishing an account.

If you have any questions or concerns, please contact me at your earliest convenience.

Respectfully submitted,

Andrew D. Jacque, Ph.D., P.E.
Chief Scientist, Founder

Please sign below to show acceptance of this proposal and indicate which tasks and/or services should be performed.

Signed: **Date:**

☐ **Task 1: Well Rehabilitation Plan ($5,660)**

☐ **Task 2: Post Rehab Assessment and Maintenance Plan ($5,179)**

Water Quality Investigations

WQI Company Background

WQI is a combined laboratory and consulting business that specializes in investigating and solving water quality, water treatment and corrosion issues (water-related concerns) in water-based systems. We have carried out numerous investigations for the following types of water-based systems:

1. Municipal, industrial, commercial, agriculture and residential groundwater wells (small to large).
2. Surface water drinking water treatment plants (various treatment technologies including conventional sand filtration, granular activated carbon, ozone, micro and ultra membrane filtration and reverse osmosis, large to small).
3. Groundwater treatment systems (various treatment technologies, large to small).
4. Water distribution systems from source to tap (groundwater and surface water systems, public and privately owned, small to large).
5. Industrial type water systems including irrigation, fire protection, non-contact cooling, aquaculture, agriculture, pharmaceutical and process water systems.
6. Wastewater treatment and conveyance systems (treatment performance and corrosion).
7. Hot and cold-water commercial premise plumbing systems, including those found in hospitals, prisons, university buildings, dormitories, condominiums, office parks, food manufacturing, and agriculture.
8. Premise plumbing water treatment systems, including ion exchange (softening), anion exchange (nitrate removal), iron filtration, ozone/UV treatment and reverse osmosis.

Solutions to water-related concerns at an investigated location are developed based on resolving/minimizing the underlying cause of a concern or mitigating the concern if the underlying cause is difficult to resolve. Our investigations generally find that water-related concerns are influenced/caused by an elevated to excessive presence of unregulated nutrients and debris in the water, and/or naturally occurring biofilm in the system investigated. All water-based systems will have naturally occurring biofilm, which is generally non-problematic if it is present at a low to moderate occurrence, if it is stable, or if debris accumulation is minimal. However, the presence of excessive or unstable biofilm in a system may cause one or more of the following water-related concerns:

1. Elevated iron, manganese, nitrate, radium, arsenic and/or odors.
2. Elevated to excessive microbiologically influenced corrosion (MIC) of galvanized steel, lead, brass, stainless steel and/or copper plumbing (form of non-uniform corrosion in all water system types – severity depends on nutrient balance). Certain metabolisms are particularly aggressive towards zinc that is used in newer no-lead brass fixtures.
3. Specifically in drinking water: repeat coliform positive test results from a well or water system; biological fouling or plugging of water treatment equipment; increased disinfection byproduct formation (chronic health concern); taste, odor, and turbid water complaints; corrosion of well and plumbing equipment; increased nitrite (acute health concern); and excessive loss of disinfection residual.
4. Increased nitrite or nitrate in the system, which is corrosive (systems with elevated ammonia or systems fed with chloramine disinfected water).

5. Increased alkalinity in the system, which is corrosive (systems with elevated organic carbon or proteins).
6. Consumption of sulfate in the system, which create “rotten egg” odor and is corrosive (systems with elevated organic carbon or where disinfection is lost).
7. Growth of waterborne opportunistic pathogens, including Mycobacterium, Pseudomonads and Legionellae.

It is WQI's experience that water quality and corrosion issues in plumbing and piping systems have numerous potential causes, which generally include one or more of the following:

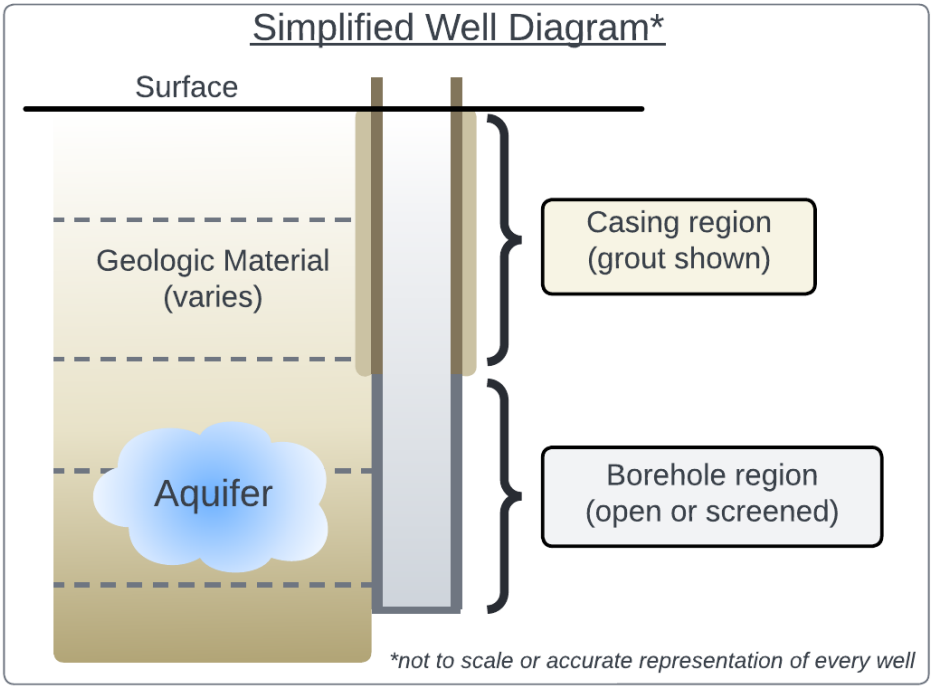
1. The presence of unregulated nutrients in the source water, which promotes natural biofilm growth in the water system. These nutrients include proteins, organic carbon, nitrogen (ammonia, nitrate and proteins), sulfate and metals. An imbalance or limitation in these nutrients causes more problematic biofilm (missing metal needed for metabolism or a missing/limited nutrient).
2. The use of orthophosphate as a corrosion inhibitor (a microbial nutrient), which will unintentionally create a nutrient imbalance in the water and could cause problematic biofilm to form. In many cases, if orthophosphate is fed at a low dose, there will be minimal biofilm related issues. However, if orthophosphate is fed at a high dose (greater than 1.5 mg/L) in the presence of elevated organic carbon (greater than 1.5 mg/L) and/or ammonia (greater than 0.2 mg/L), there could be areas of the distribution system that see problematic biofilm growth.
3. Biofouling of water treatment equipment (softeners, iron filters, membranes, etc), which increases nutrients present in the water and seeds the downstream water system with biofilm.
4. High water age and low disinfection concentration, which can be impacted by distribution system management and the plumbing system's orientation in a distribution system.
5. The use of water efficient fixtures, which are not adequately recognized by the plumbing code. This results in oversized pipes and causes reduced flow velocities in the plumbing, which allows debris and biofilm to accumulate because the flow is too low for the plumbing to be self-cleaning.
6. Specifically in complex and commercial plumbing systems:

    a. The use of a combined fire suppression and domestic water service at the entrance to a building, which causes increased water age and promotes debris accumulation and biofilm growth in the service line that gets transferred to the downstream plumbing system.
    b. The use of redundant water services to meet hospital requirements, which further increases water age, debris accumulation and biofilm growth at the entry point to the building, and subsequent particle loading and biofilm growth in the downstream plumbing system.
    c. The use of secondary hot water disinfection, including chlorine, chloramine, chlorine dioxide, and silver-copper ionization, which creates bacterial stress to cause biofilm to thicken. Particles created in silver-copper ionization create debria and a niche for biofilm and bacteria to thrive.

d. The presence of dead-legs or low-flow areas in the plumbing, which creates the potential for stagnant conditions and the growth of unwanted biofilm.
e. Use of recirculated hot water systems to meet water efficiency and so-called energy efficiency requirements in the plumbing code. These recirculated systems dramatically increase water age, which promotes biofilm growth and the need for water management and water re-treatment to control the presence of opportunistic pathogens. This re-treatment will control bulk water bacteria to minimize exposure to opportunistic pathogens, but it is generally ineffective at controlling biofilm growth and resulting corrosion of plumbing.

A brief list of Municipalities WQI has worked with to address corrosion, capacity and water quality issues:

- City of Fitchburg (Well 4 and Well 10)
- City of Madison (Well 18)
- Village of Germantown (numerous)
- City of Viroqua (Well 5 and Well 6)
- City of Jefferson (Well 4 and 5)
- Village of Marshall (numerous)
- Town of Sheboygan (Well 2 and Well 3)
- Village of Coleman (Well 2 and Well 3)
- Village of Middleton (Well 4)
- City of Verona (Well 6)
- City of Pewaukee (Well 4, Well 5 and Well 8)
- City of Marshfield (numerous – they have 20 lower capacity wells)
- State of Wisconsin Facilities (DOC, DOT, DNR, DHS, etc)



Water Quality Investigations

April 25, 2025

Nate Fosbinder
City of Mineral Point - Utilities

SUBJECT: Desktop Corrosion Control Treatment Study – Mineral Point

Background

Mineral Point is currently under orders from the Wisconsin DNR to complete a desktop Corrosion Control Treatment (CCT) study by March 24, 2026. The CCT order stems from an Action Level Exceedance (ALE) for lead that occurred during June-September 2023 Lead and Copper Rule (LCR) compliance testing.

The well assessment from February of 2025 data suggests that lead corrosion in the Mineral Point water system is caused by a combination of chemical corrosion and microbiologically influenced corrosion (MIC). From a uniform chemical corrosion perspective, which is the basis of the LCR, Well 3 has an elevated chloride to sulfate mass ratio and moderately low pH, and Well 4 has a moderately low pH, which collectively create a higher potential for corrosion to occur. However, if these were the only issues causing corrosion in the Mineral Point water system, the City would have always had high results for lead in LCR testing. The recent increase in lead corrosion with no change in water sources suggests that non-uniform MIC is the primary cause of increased lead corrosion.

Water from Well 3 has moderate concentrations of nitrate and organic carbon, which are nutrients that set up the potential for growth of a nitrifying type of biofilm in the well and water system. Acid conditions associated with nitrification are known to be corrosive toward plumbing. Water from Well 4 has moderate concentrations of organic carbon and proteins, which are nutrients that set up the potential for growth of a carbon cycling type of biofilm in the well and water system. Thick biofilm with carbon cycling creates organic acids, which are known to be corrosive towards plumbing. Stagnant and low-flow conditions in plumbing allow biofilm to accumulate and thicken, which increases the potential for acid production, MIC and non-uniform corrosion of lead. Stagnant conditions in plumbing have worsened in recent years with the required use of water efficient fixtures (new and replacements), including low-flow toilets, shower heads, wash machines and faucets.

The Energy Policy Act of 2005 (EPAct 2005) requires the manufacture and use of water efficient plumbing fixtures. As a result of this act, average residential water usage in Wisconsin dropped from 144 gallons per day in 1998 to 105 gallons per day in 2023, which is a 28% reduction in volume. Along with volume reductions there are mandated flow reductions in EPAct 2005, which reduce the flow velocity in plumbing and thus inhibit the ability for plumbing to be self-cleaning (velocity is now too low to remove debris and biofilm). This issue is more noticeable in underutilized plumbing systems, which include systems sized for a seldom seen peak flow (schools, office buildings, restaurants, etc) or in low-use systems (homes that are large, empty-nesters houses, or homes used by the elderly). This is a new cause of corrosion in residential and

commercial plumbing systems that is beyond the control of the EPA yet it is being forced on the Utility to solve through CCT. In some cases, this corrosion issue is worsened by CCT and can only be solved with plumbing replacement, or the use of targeted maintenance, both of which require a site assessment to determine applicability and a robust public education program to implement.

Preparation of a desktop CCT that addresses chemical corrosion is what the DNR is looking for and what they can regulate – there are no regulations that cover plumbing systems once they are installed. However, the DNR also wants the Utility to employ best practices such as water main flushing to reduce stagnation and debris in the water distribution system (large mains), though this is not officially part of the EPA's CCT guidance and is not allowed for CCT even though it is proven to reduce corrosion. The EPA and DNR have no authority over plumbing design, installation or maintenance and thus they try to control conditions in plumbing using source water CCT, which may or may not work. Our desktop CCT approach includes documenting the occurrence of chemical corrosion, debris and MIC in the water system and plumbing systems, and providing methods to reduce all corrosion, which will likely include well rehabilitation to reduce biofilm that seeds the water system, unidirectional flushing to reduce debris accumulation in the water distribution system, and customer education on proper sizing and maintenance of plumbing, and may include low dose CCT. If MIC is the issue causing lead corrosion in Mineral Point, public education and actions by homeowners are the only methods that will prevent the need for feeding phosphate for corrosion control.

Plumbing and Corrosion Investigations - Typical Testing

Typical investigations include analysis of a series of samples from a system to help assess the presence, severity and location(s) of naturally occurring biofilm and if water quality changes in the system. This approach helps us understand where water quality issues start (i.e. corrosion, contaminant exceedances, bacteria and waterborne pathogens, aesthetic concerns) and how best to control them (chemical/mechanical cleaning, improved corrosion control treatment, alternate construction materials, flushing, etc.). Because all water in a plumbing system is technically building influent entry point water, comparative analysis of all samples to the entry point sample will determine the role that water quality or biofilm has, if any, on water quality changes in the plumbing system and in the potential for water quality and corrosion issues. Data, including water usage information, if available, would also be assessed to determine the need for system cleaning, biofilm remediation, enhanced maintenance and/or modifications in the plumbing system. Results would be analyzed and compared to determine the following:

1. Whether water quality is changing in the building and assessing why.
2. Whether corrosion occurs in the plumbing system to release metals from piping, valves, fittings, solder and/or equipment.
3. Whether nutrients present in the water promote unwanted biofilm growth, corrosion and water quality issues in the plumbing system.
4. Whether a nutrient limitation in the water promotes growth of an aggressive biofilm to cause non-uniform corrosion (pinhole and crevice corrosion).

5. Whether biofilm in the plumbing system is performing nitrification, denitrification, sulfate reduction or sulfur oxidation, which are metabolisms that promote corrosion and alter water quality.
6. Whether debris could accumulate in the plumbing to promote biofilm growth and corrosion.

Proposal

We offer the following proposal to assist Mineral Point with investigating the lead corrosion issue in their water system:

Task 1: Plumbing System – Service Line Assessment: Sampling of water in the water system and from plumbing systems to assess the cause of lead corrosion. This task involves collecting and analyzing the following water samples from three separate LCR sampling locations to assess variability in the system and the cause of the lead corrosion issue:

Samples

1. Entry Point LCR Location: Influent sample to a lead service line LCR sample location after flowing for 10 minutes at 1.5 gallons per minute (about 40 gallons). This sample represents the starting condition for water at the sample location and will be used for comparison with profile samples and the service line flush sample at a location, and to previously collected well samples. This sample is collected six hours prior to profile samples.
2. Profile Samples: collect the 1st liter through 10th liter samples from a lead service line LCR sample location after a 6-hour period of stagnation. These samples assess corrosion products present in the plumbing and service line.
3. Service Line Flush: Composite sample from first five gallons of water collected while flushing the service line at about 25 gallons per minute. This sample is collected after the profile sample by flushing the service line though a temporary flushing horn in place of the water meter. Debris collected from this process assesses biofilm accumulation and the presence of settled debris in the service line and the potential or these materials to influence corrosion.

Testing

1. Each profile sample would be assessed for the presence of dissolved and particulate lead and copper (30 samples). The presence of particulate lead is an indicator of debris in the system and that phosphate feed would not create a scale to prevent lead in the water.
2. The Entry Point samples, 1st and 5th liter samples, and the Service Line Flush samples would be assessed for the following (12 samples):
   a. The presence of nutrients and chemical components (alkalinity, nitrite, nitrate, orthophosphate, total phosphate, ammonia, chloride, sulfate, and total organic carbon), and metals (ICP metals scan – 19 metals).
   b. The presence of biofilm and biofilm activity with WQI's Biofilm Indication Test®, Biofilm Activity Test®, and Protein Assay.
   c. The presence of free and total chlorine.

3. Test results would be correlated to nutrients and metals data to determine the cause for biofilm, where biofilm is the most problematic, whether biofilm present would be corrosive, and how to control it.

Pricing

The cost for the above at three locations with a summary report and recommendations would not exceed $21,295. The cost includes WQI laboratory fees, sample coordination, data analysis, report preparation and one follow-up virtual meeting to explain the results. The cost does not include preparation of remediation plans and procedures. Work would be billed on a time and material basis. Samples would be collected by Mineral Point staff with onsite assistance from WQI (assumes three trips by WQI) in kits and instructions provided by WQI.

Task 2: Preparation of the Desktop Corrosion Control Treatment Study: Preparation of a Desktop Corrosion Control Treatment (CCT) study findings from Task 1, from the Well 3 and Well 4 investigation. Work for the CCT includes the following:

Desktop CCT Report

The desktop CCT report will include the following sections, which will satisfy DNR and EPA requirements:

1. General water system configuration.
2. An evaluation of raw, entry point, and distribution system water quality data for the determination of key water quality corrosivity parameters and their potential impact on lead and copper release.
3. An evaluation of CCT efficiency that is currently used at Mineral Point.
4. An evaluation of sources for lead and/or copper in the system, including the following:
    a. Water main and service line materials as a source for lead and copper.
    b. Plumbing fixtures and materials as a source for lead and copper.
5. Review of LCR compliance history to identify potential water quality issues that are contributing to lead and/or copper releases.
6. Evaluation of the efficacy of potential corrosion control treatments described in s. NR 809.543(3), including:
    a. Alkalinity and pH adjustment.
    b. Calcium hardness adjustment.
    c. The addition of a phosphate or silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test samples.
7. Consideration of other treatment options that may be more effective at reducing lead and copper for Mineral Point's water system.
8. A discussion of how the recommended treatment aligns with EPA guidance.

Water System Data and Assessments

Data analysis is an important part of preparing the desktop CCT, and generally includes the following:

1. Assessing sources of lead in the water system per EPA guidance, including the presence of the following:
    a. Lead service lines
    b. Galvanized service lines and plumbing with or without a lead lining
    c. Leaded joints in cast iron pipes (pre 1929 – the year that mechanical joint pipe was introduced)
    d. Leaded brass fixtures (pre 2014 – the year that Reduce Lead in Drinking Water Act of 2011 took effect)
    e. Leaded solder for copper pipe (pre 1987)
    f. Source water metals (seen in some anaerobic waters in contact with lead and/or copper containing geology)
2. Assessing the potential for water to cause electrochemical corrosion per EPA guidance, i.e. water that is acidic or that disrupts scale formation, including assessment of the following parameters:
    a. Alkalinity, pH, and DIC.
    b. Corrosion inhibitors.
    c. Hardness (calcium and magnesium).
    d. Buffer Intensity.
    e. Dissolved oxygen (DO).
    f. Oxidation reduction potential (ORP).
    g. Ammonia, chloride, and sulfate concentrations.
    h. Natural organic matter (NOM) or total organic carbon (TOC) concentrations.
    i. Iron, aluminum, and manganese.
3. Assessing the potential for microbiologically influenced corrosion (MIC) and developing MIC mitigation strategies, which are mentioned but not considered in EPA guidance but needed to fully assess causes of corrosion. This section includes the following:
    a. Characterizing the potential for biofilm to form based on the presence and balance of nutrients present in the source(s) and in the water system. This includes the addition of nutrients such as ammonia (chloramine fed systems) and phosphate (corrosion control), and the degradation of complex nutrients in the water to simpler forms through UV and ozone treatment.
    b. Testing for the presence of biofilm in the source water and in water treatment equipment to assess the potential to introduce biofilm and biofilm related secretions to the water system from the source(s). Biofilm secretions generally include polysaccharides, proteins, organic acids, lipids and enzymes.

c. Testing for the presence of biofilm and MIC in the water system based on comparison of changes in flowing and stagnation samples and flushing samples collected from LCR sample locations.
d. Developing plans for nutrient management at the source(s) to minimize biofilm growth and MIC in the system.
e. Developing plans for mitigating debris accumulation and growth of naturally biofilm in the source water, water treatment plant, water distribution system and premise plumbing systems to prevent or minimize introduction of biofilm and related biological secretions to the water system and plumbing systems. This may include public education to assist property owners with methods that they can use to maintain parts of their plumbing systems that are out of the control of the water utility, which is needed because the water utility is responsible for water quality from source to tap based on LCR testing.
f. Operation of water systems in a manner to minimize accumulation of debris and the presence of biofilm.

4. Developing plans to reduce corrosion caused by electrochemical attack per EPA guidance, which may include one or more of the following:
    a. Removing the sources of lead (find and fix approach)
        i. LSL replacement (municipal systems).
        ii. Water main replacement or lining to remove lead joint pipes (municipal systems).
        iii. Galvanized pipe replacement (internal and water service), which typically contains iron corrosion products that hold onto and then randomly release lead to drinking water (property owner plumbing systems).
        iv. Water fixture replacement programs (all water systems), focusing on replacing lead brass fixtures that were installed prior to 2014 (year that Reduce Lead in Drinking Water Act of 2011 took effect). This follows a find and fix approach that is in the Lead Copper Rule Revision (LCRR).
    b. Advanced water treatment to reduce the potential for electrochemical corrosion and/or MIC in the water system.
    c. Addition of an appropriate corrosion inhibitor to help retain corrosion products within water system scales. An appropriate concentration would be one that improves biostability of the water, not an assumed dose based on sequestration of hardness and metals.

Pricing

The above work for the Desktop CCT includes up to 80 hours of project manager effort and 40 hours of scientist effort for a total cost of $19,886. The cost includes up to three virtual meetings with the DNR. Work would be billed on a time and material basis.

Work for the Desktop CCT study would begin upon notice to proceed and would take about four months to complete, finishing ahead of the March 24, 2026 CCT study deadline. Once the study is reviewed and accepted by the DNR, or modified by an alternate mandated CCT with chemical feed, the City has 24 months to implement recommendations or install CCT. In the meantime, it is highly recommended that the Utility resumes LCR testing, testing double your normal sites in the first and second half of this year, to show the current state of the system and if the system complies with the LCR. The study, performed in parallel to resumed sampling, would identify efforts needed to reduce corrosion at LCR sites and return the Utility back to compliance with the LCR before the CCT study is reviewed, which would stop the process and keep the DNR from mandating CCT with phosphate feed.

WQI would invoice for work performed on a monthly basis with payment due within 30 days of invoice.

We appreciate the opportunity to submit this proposal and look forward to working with you. If this proposal is agreeable, please sign below, indicate with a checkmark which tasks you would like us to perform and return with billing information for establishing an account.

If you have any questions or concerns, please contact me at your earliest convenience.

Respectfully submitted,

Andrew D. Jacque, Ph.D., P.E.
Chief Scientist, Founder

Please sign below to show acceptance of this proposal and indicate which tasks and/or services should be performed.

Signed: **Date:**

☐ **Task 1 (Total cost $21,295)**

☐ **Task 2 (Total cost $19,886)**

Water Quality Investigations

Please fill out this form completely and return along with the signed proposal.

Primary Contact Information

Name (print):

Title:

Company (if applicable):

Email:

Phone:

Sampling Address

Street:

Street 2 (apt., suite, etc.):

City:

State:

Zip:

County:

Billing Information

Payment Method: □ ACH □ Check □ Cash

Invoicing Method: □ Email □ Mail

PO Number:

Billing Contact Information (if different from above)

Name:

Email:

Phone:

Billing Address (if different from above)

Street:

Street 2 (apt., suite, etc.):

City:

State:

Zip:

County:

WQI Water Quality Investigations

WQI Company Background

WQI is a combined laboratory and consulting business that specializes in investigating and solving water quality, water treatment and corrosion issues (water-related concerns) in water-based systems. We have carried out numerous investigations for the following types of water-based systems:

1. Municipal, industrial, commercial, agriculture and residential groundwater wells (small to large).
2. Surface water drinking water treatment plants (various treatment technologies including conventional sand filtration, granular activated carbon, ozone, micro and ultra membrane filtration and reverse osmosis, large to small).
3. Groundwater treatment systems (various treatment technologies, large to small).
4. Water distribution systems from source to tap (groundwater and surface water systems, public and privately owned, small to large).
5. Industrial type water systems including irrigation, fire protection, non-contact cooling, aquaculture, agriculture, pharmaceutical and process water systems.
6. Wastewater treatment and conveyance systems (treatment performance and corrosion).
7. Hot and cold-water commercial premise plumbing systems, including those found in hospitals, prisons, university buildings, dormitories, condominiums, office parks, food manufacturing, and agriculture.
8. Premise plumbing water treatment systems, including ion exchange (softening), anion exchange (nitrate removal), iron filtration, ozone/UV treatment and reverse osmosis.

Solutions to water-related concerns at an investigated location are developed based on resolving/minimizing the underlying cause of a concern or mitigating the concern if the underlying cause is difficult to resolve. Our investigations generally find that water-related concerns are influenced/caused by an elevated to excessive presence of unregulated nutrients and debris in the water, and/or naturally occurring biofilm in the system investigated. All water-based systems will have naturally occurring biofilm, which is generally non-problematic if it is present at a low to moderate occurrence, if it is stable, or if debris accumulation is minimal. However, the presence of excessive or unstable biofilm in a system may cause one or more of the following water-related concerns:

1. Elevated iron, manganese, nitrate, radium, arsenic and/or odors.
2. Elevated to excessive microbiologically influenced corrosion (MIC) of galvanized steel, lead, brass, stainless steel and/or copper plumbing (form of non-uniform corrosion in all water system types – severity depends on nutrient balance). Certain metabolisms are particularly aggressive towards zinc that is used in newer no-lead brass fixtures.
3. Specifically in drinking water: repeat coliform positive test results from a well or water system; biological fouling or plugging of water treatment equipment; increased disinfection byproduct formation (chronic health concern); taste, odor, and turbid water complaints; corrosion of well and plumbing equipment; increased nitrite (acute health concern); and excessive loss of disinfection residual.
4. Increased nitrite or nitrate in the system, which is corrosive (systems with elevated ammonia or systems fed with chloramine disinfected water).

5. Increased alkalinity in the system, which is corrosive (systems with elevated organic carbon or proteins).
6. Consumption of sulfate in the system, which create “rotten egg” odor and is corrosive (systems with elevated organic carbon or where disinfection is lost).
7. Growth of waterborne opportunistic pathogens, including Mycobacterium, Pseudomonads and Legionellae.

It is WQI's experience that water quality and corrosion issues in plumbing and piping systems have numerous potential causes, which generally include one or more of the following:

1. The presence of unregulated nutrients in the source water, which promotes natural biofilm growth in the water system. These nutrients include proteins, organic carbon, nitrogen (ammonia, nitrate and proteins), sulfate and metals. An imbalance or limitation in these nutrients causes more problematic biofilm (missing metal needed for metabolism or a missing/limited nutrient).
2. The use of orthophosphate as a corrosion inhibitor (a microbial nutrient), which will unintentionally create a nutrient imbalance in the water and could cause problematic biofilm to form. In many cases, if orthophosphate is fed at a low dose, there will be minimal biofilm related issues. However, if orthophosphate is fed at a high dose (greater than 1.5 mg/L) in the presence of elevated organic carbon (greater than 1.5 mg/L) and/or ammonia (greater than 0.2 mg/L), there could be areas of the distribution system that see problematic biofilm growth.
3. Biofouling of water treatment equipment (softeners, iron filters, membranes, etc), which increases nutrients present in the water and seeds the downstream water system with biofilm.
4. High water age and low disinfection concentration, which can be impacted by distribution system management and the plumbing system's orientation in a distribution system.
5. The use of water efficient fixtures, which are not adequately recognized by the plumbing code. This results in oversized pipes and causes reduced flow velocities in the plumbing, which allows debris and biofilm to accumulate because the flow is too low for the plumbing to be self-cleaning.
6. Specifically in complex and commercial plumbing systems:

    a. The use of a combined fire suppression and domestic water service at the entrance to a building, which causes increased water age and promotes debris accumulation and biofilm growth in the service line that gets transferred to the downstream plumbing system.
    b. The use of redundant water services to meet hospital requirements, which further increases water age, debris accumulation and biofilm growth at the entry point to the building, and subsequent particle loading and biofilm growth in the downstream plumbing system.
    c. The use of secondary hot water disinfection, including chlorine, chloramine, chlorine dioxide, and silver-copper ionization, which creates bacterial stress to cause biofilm to thicken. Particles created in silver-copper ionization create debria and a niche for biofilm and bacteria to thrive.

d. The presence of dead-legs or low-flow areas in the plumbing, which creates the potential for stagnant conditions and the growth of unwanted biofilm.
e. Use of recirculated hot water systems to meet water efficiency and so-called energy efficiency requirements in the plumbing code. These recirculated systems dramatically increase water age, which promotes biofilm growth and the need for water management and water re-treatment to control the presence of opportunistic pathogens. This re-treatment will control bulk water bacteria to minimize exposure to opportunistic pathogens, but it is generally ineffective at controlling biofilm growth and resulting corrosion of plumbing.

Outlook

Primary Clarifier Inspection/Adjustment

From Nate Fosbinder <utilities@cityofmineralpointwi.gov>
Date Mon 5/12/2025 3:35 PM
To Matthew Honer <administrator@cityofmineralpointwi.gov>

Matt,
You can copy and paste the following:

The Primary Clarifier was rebuilt in 2021. This included the Weirs, scrapers, chains, sprockets and the drive being rebuilt. The scum trough was not replaced at that time and is made of iron that is near failure. I would like to replace this with a stainless trough and have the clarifier inspected and adjusted. In four years' time all of the new pieces have begun stretching and wearing and need to be checked over. We have adjusted the tension on the chain and it is near its limit of travel. I believe now is good time to have the all the components checked and adjusted to continue to get the most life we can from the system. The two quotes are quite different but the one from Staab Construction includes pressure washing everything, this I don't think this is needed and would recommend going with Sabel.

Thank you,

Nate Fosbinder
Water/Sewer Superintendent | City of Mineral Point
Phone: 608-987-8088
Cell: 608-574-2166
Email: utilities@cityofmineralpointwi.gov
Address: 137 High St., Ste 1, Mineral Point, WI 53565
www.cityofmineralpoint.com

Quote No. Q11487
Date: Mar 25, 2025

W 3150 Co Rd H, Fond du Lac, WI 54937
920-581-5810
www.sabelmechanical.com
Sabel Contact: Doug Sabel
Email: doug@sabelmechanical.com

Sabel Mechanical LLC

Customer Billing Information	Job Site Information	Contact and Other Information
MINERAL POINT WWTP 137 HIGH STREET SUITE 1, MINERAL POINT, WI 53565	Mineral Point WWTP 1020 Bollerud Street, Mineral Point, WI 53565	Contact: Nate Phone: 608-574-2166 Email: utilities@cityofmineralpointwi.gov

Sabel Mechanical is pleased to submit this proposal for:

Scope of Work

Supply and install scum tube, adjust chain on clarifier. $14,030.58

Supply, remove and install scum tube, Clean mounting brackets for scum tube and paint with marine paint. Loosen chain on final clarifier, remove 1 or 2 chain links and re-adjust, Inspect clarifier plastics, Instruct their crew on how to check limit switches and grease drive shear pin sprocket.

Customer to take samples on Tuesday then drain tank to have empty when we arrive on a Wednesday.

Quote Total: $14,030.58
Estimate valid until: Apr 24, 2025
Terms of Payment: 30 days

Customer Signature: _____ Date _____

Customer Name (Print) _____

P.O. #: _____

Due to the fluctuating material pricing and availability, quote is valid thru end of today's business day, Pricing may have to be adjusted at time of purchase and will be reflected when project is invoiced

staab construction corporation
100% EMPLOYEE OWNED

1800 Laemle Ave | Marshfield, WI 54449 | 715-387-8429

PROPOSAL
(Negotiated)

Nate Fosbinder
City of Mineral Point
137 High Street, Suite 1
Mineral Point, WI 53565

Project Reference:	Mineral Point - Primary Clarifier
Quote Date:	05/01/25
Quote Expires:	05/31/25
Bid Date/Time	05/01/25
Bid No./Revision:	2120

Phone: 608-987-8088 Email: utilities@cityofmineralpointwi.gov

RE: Mineral Point - Primary Clarifier

The undersigned, having familiarized ourself with the plans, specifications, and local conditions affecting the cost of the work, hereby propose to furnish all labor, material, necessary tools, expendable equipment, and all utility and transportation services necessary to complete the following in a workmanlike manner according to standard practices. This proposal will not be withdrawn for a period of thirty (30) days after proposal date.

BASE BID	**PRIMARY CLARIFIER INSPECTION & SCUM TROUGH REPLACEMENT**	**$45,500.00**

We base our price on completing an annual inspection of the primary clarifier, which includes pressure washing interior of tank and equipment. Inspection report will be compiled and sent to owner with the findings and recommendations. Price also includes the demolition of the existing scum trough and furnishing with new stainless steel trough assembly. Price includes installation and all necessary stainless steel fasteners. All rigging and lifting equipment is also included in the price. Scope of work to be completed in 3-4 days. Owner responsibilities include draining clarifier prior to mobilization and providing vac truck during cleaning.

At minimum we exclude the following:

• State/Federal Prevailing Wages, Performance & Payment Bond.

• Sales tax is excluded from this proposal. An estimate for sales tax on purchases of materials and equipment by contractor and subcontractors is listed above. If this project qualifies for exemption, owner shall provide a certification of exempt status which authorizes contractor and subcontractors to make purchases without sales tax.

• Quality control concrete, soil, water leakage, and/or lead & asbestos testing or survey.

• Contaminated soil & water remediation and/or removal. If contaminated water is encountered, owner is responsible for proper disposal costs.

• Asbestos & lead abatement.
• Ground water dewatering removal.
• Unsuitable soils removal and/or replacement.
• Temporary bypassing and/or treatment.

Owner Responsibilities:

• Supply of potable and/or non-potable water supply.
• Supply of Electricity for construction purposes.
• Supply of Restroom facilities.

Clarifications:

• Owner to have clarifier drained prior to mobilization and provide vac truck to pump out debris during cleaning.

Payment Terms: Invoiced upon completion and/or monthly and payable within 30 days from date of invoice. 18% Annual interest added to accounts over 30 days. Where retainage is applicable, client may withhold a maximum of 5%, not to exceed the value of work to be completed. Staab requires full retainage release & final payment within 60 days of completion for our scope of work.

Schedule: Staab will begin executing contract obligations within 30 calendar days after we receive a notice to proceed and will be completed in approximately 4 calendar days. Normal work hours are Monday thru Thursday, 10 hour days per week straight time labor rate. Compressed schedule compensation is assessed at 1.5 times after 10 hours each day and/or beyond a 40 hour work week. Holiday pay compensation is assessed at 2 times the hourly base rate. Compensation adjustments are based on the rates noted below under "Changed Conditions".

Changed Conditions / Contract Adjustment Rates: If subsurface, latent, and/or unknown physical conditions differ from those indicated in this agreement or in documents made available by Contractor, Engineer, or Owner, Staab Construction shall be entitled to an equitable change in contract price and an extension of the project completion date for such changed conditions. Extra work and associated costs will proceed only upon written orders, and will become an extra charge over and above this base bid price. Such additional charges will be based on actual cost required to complete the work. Rates for time & material cost plus proposals are available upon request.

Price Escalators: If there is an increase in the actual cost of labor or materials charged to the Contractor in excess of 5% subsequent to making this Agreement, the price set forth in this Agreement shall be increased without the need for a written change order or amendment to the contract to reflect the price increase and additional direct cost to the contractor. Contractor will submit written documentation of the increased charges to the Prime Contractor/Owner upon request. As an additional remedy, if the actual cost of any line item increases more than 10% subsequent to the making of this Agreement, Contractor, at its sole discretion, may terminate the contract for convenience.

Contract Cancellation: Upon written notification for any such nature that our contract is to be terminated, Staab Construction will stop work immediately. Costs incurred will be billed for reimbursement utilizing the rates noted in "Changed Conditions/Contract Adjustment Rates".

Limited Warranty: Unless otherwise noted on the face hereof, Staab Construction goods, auxiliaries, and parts thereof are warranted per contract agreement documents, against defective workmanship and material for a period of twelve (12) months from date of substantial project completion with the original user. If the goods or services do not conform to the warranty stated above, then as Buyer's sole remedy, Staab shall, at Staab's option, either repair or replace the defective goods or reperform defective services not to exceed the value of the original contract. If applicable, Staab will assign to Buyer all warranties applicable to any portion of the Work or Materials obtained from third parties, or if not assignable, will assert such warranties on behalf of buyer's request. Warranty shall not apply to any work which that has been subjected to improper or excessive operating conditions, misapplications, accidents, neglect, improper repair or alteration, normal wear and tear, corrosion, abrasion or erosion, abuse, defects resulting from Buyer's specifications or designs, or any unauthorized disassembly or rework by others.

Contracts: Please note this proposal is for bid submission reference only and is not a formal contract between buyer and seller. A mutual agreed upon contract form will be selected between buyer and seller after Staab receives written confirmation accepting this proposal. At that time both parties will review agreeable contract terms and conditions as it relates to this proposal document.

Sales & Use Tax: Sales & use tax on the purchase of material and equipment by Staab and subcontractors has been excluded as part of this proposal. If this proposal is tax exempt, owner will provide documentation to be used by Staab and all subcontractors to purchase materials and equipment without sales tax. If this proposal is not tax exempt, please add the appropriate sales tax value referenced in the pricing table above.

Insurance: Staab Construction purchases and maintains property insurance (Builders Risk or Installation Floater) upon the Work on a completed value basis, in the amount of the full insurable replacement cost and be written on a “all-risk” policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework, and materials and equipment in transit and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the owner or engineer. Property insurance shall be maintained until the project has reached substantial completion and is operating to its intended purpose.

Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete. Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined.

Other insurance Staab Construction will maintain includes liability, automobile, and workman's compensation. insurance. Professional liability insurance will be provided to cover claims for negligent professional services performed by Staab Construction during the term of this agreement. Staab Construction will not be required to provide professional design services unless specifically required by the Contract Documents for a portion of the work. Limits of professional liability insurance is $2,000,000 per claim and an annual aggregate of $2,000,000.

In order to secure performance of its payment and other obligations under this agreement, owner shall provide contractor with financial security in such form as shall be reasonably acceptable to contractor. Such security shall be delivered to and approved by contractor within thirty (30) days of the effective date of this agreement. In the event that owner does not provide acceptable financial security by such date, contractor may at its election immediately or within thirty (30) days thereof terminate this agreement in which case this agreement shall be of no further force or effect except that owner shall be and remain fully liable for the cost of the work theretofore incurred by contractor in connection with this project together with 15% percent of such expenditures (to cover contractor's profit and overhead) regardless of when such expenditures were incurred and regardless of whether such expenditures ultimately proved to be of any value or use to owner.

AS REQUIRED BY THE WISCONSIN CONSTRUCTION LIEN LAW, THIS CONTRACTOR HEREBY NOTIFIES OWNER THAT PERSONS OR COMPANIES FURNISHING LABOR OR MATERIALS FOR THE CONSTRUCTION ON OWNER'S LAND MAY HAVE LIEN RIGHTS ON OWNER'S LAND AND BUILDINGS IF NOT PAID. THOSE ENTITLED TO LIEN RIGHTS, IN ADDITION TO THE UNDERSIGNED CONTRACTOR, ARE THOSE WHO CONTRACT DIRECTLY WITH THE OWNER OR THOSE WHO GIVE THE OWNER NOTICE WITHIN SIXTY (60) DAYS AFTER THEY FIRST FURNISH LABOR OR MATERIALS FOR THE CONSTRUCTION. ACCORDINGLY, OWNER PROBABLY WILL RECEIVE NOTICES FROM THOSE WHO FURNISH LABOR OR MATERIALS FOR THE CONSTRUCTION, AND SHOULD GIVE A COPY OF EACH NOTICE RECEIVED TO ITS MORTGAGE LENDER, IF ANY. THIS CONTRACTOR AGREES TO COOPERATE WITH THE OWNER AND OWNER'S LENDER, IF ANY, TO SEE THAT ALL POTENTIAL LIEN CLAIMANTS ARE DULY PAID.

Respectfully Submitted By:

Jacob J Charron

Service Manager

Jake Charron

ACCEPTANCE OF PROPOSAL -	The prices, specifications, and conditions are satisfactory and are hereby accepted. You are authorized to do the work specified. Payment will be made as outlined above. This proposal will now be a binding contract.

Signature: _____ Date: _____

_____

(Printed name and title)

GENERAL, MECHANICAL, EARTHWORK CONTRACTOR

•

Municipal & Industrial

•

The Contractor of Choice Improving Tomorrow's Environment

Outlook

Fwd: First Amendment to PRTC Mineral Point Parking Lot Lease

From Alyssa Schaeffer <a.schaeffer@swwrpc.org>
Date Mon 4/28/2025 8:53 AM
To Matthew Honer <administrator@cityofmineralpointwi.gov>

1 attachment (942 KB)
First Amendment to Mineral Point Parking Lot Lease (with terms approved by PRTC 4.25.25) (5965270.1).pdf;

Good morning Matt,

PRTC approved a 20-year lease for the parking lot. However, the rent approved by PRTC is now $525 which covers the full 20 years. Finally, the City would need to develop legal descriptions for the Demised Premises and Snow Melt Lot prior to the lease being signed.

I'll take another look through our files with regard to the legal descriptions, but I'm not promising much.

Best,
Alyssa Schaeffer
Assistant Planner
Southwestern Wisconsin Regional Planning Commission

---------- Forwarded message ---------
From: **Julia Potter** <JPotter@boardmanclark.com>
Date: Fri, Apr 25, 2025 at 4:01 PM
Subject: First Amendment to PRTC Mineral Point Parking Lot Lease
To: Alyssa Schaeffer <a.schaeffer@swwrpc.org>

Hi Alyssa,

Attached is an updated version of the First Amendment to Mineral Point Parking Lot Lease that includes the terms the PRTC approved at its meeting this afternoon. Per the PRTC's motion, the City will need to locate or develop legal descriptions of the Demised Premises and Snow Melt Lot for inclusion on Exhibits B and C before the First Amendment is signed.

If you have any questions, please let me know.

Many thanks,

Julia

BoardmanClark

JULIA POTTER (SHE/HER)

ATTORNEY

DIRECT +1 608-283-1720
PHONE +1 608-257-9521
FAX 608-283-1709
JPOTTER@BOARDMANCLARK.COM
BOARDMANCLARK.COM

BOARDMAN & CLARK LLP
1 S PINCKNEY ST STE 410
PO BOX 927
MADISON, WI 53701-0927

FIRST AMENDMENT TO LEASE AGREEMENT

THIS FIRST AMENDMENT TO LEASE AGREEMENT ("First Amendment") is entered into as of this _____ day of _____, 2025, by and between the Pecatonica Rail Transit Commission ("Lessor" or "Commission") and the City of Mineral Point ("Lessee").

WITNESSETH:

WHEREAS, the Lessor is the owner of rail corridor property which is being held under the Federal Rails-to-Trails Program for future rail use and is currently used for a recreation trail under an agreement with the Tri-County Trail Commission; and

WHEREAS, Lessee is a governmental entity and desires to use a portion of the Commission's property for parking purposes;

WHEREAS, in March of 2005, Lessor and Lessee entered into that certain Lease Agreement attached hereto as Exhibit A ("Lease");

WHEREAS, the initial term of the Lease ran from March 1, 2005 through March 1, 2025 and, pursuant to Section 1.4 of the Lease, the Lease automatically renewed for a period of one year and is now set to expire on April 31, 2026;

WHEREAS, Lessor and Lessee desire to enter into this First Amendment to extend the term of the Lease and modify it as set forth below.

NOW, THEREFORE, FOR GOOD AND VALUABLE CONSIDERATION, THE RECEIPT AND SUFFICIENCY OF WHICH IS HEREBY ACKNOWLEDGED, LESSOR AND LESSEE DO COVENANT AND AGREE AS FOLLOWS:

1. The term of the Lease under Section 1.3 is hereby extended through April 31, 2045.

2. Lessee shall make a one-time payment of Five Hundred Twenty-Five Dollars ($525.00) within 60 days of execution of this First Amendment, as and for rent for the period commencing on March 1, 2025 and ending on April 31, 2045.

3. The attachment to the lease containing the legal description of the Demised Premises is hereby stricken and replaced with the attached Exhibit B.

4. The attachment to the lease containing the legal description of the Snow Melt Lot is hereby stricken and replaced with the attached Exhibit C.

5. Section 9.1(a) of the Lease is hereby stricken and replaced with the following:

   (a) If to Lessor, to:
   Pecatonica Rail Transit Commission
   20 S. Court Street

PO Box 262
Platteville, WI 53818

6. Section 9.1(b) of the Lease is hereby completed with the following:

   (b) If to Lessor, to:
   City of Mineral Point
   Attn: City Administrator
   137 High Street, Suite 1
   Mineral Point, WI 53565

7. Except as amended by this First Amendment, the Lease is ratified and remains in full force and effect.

CITY OF MINERAL POINT, LESSEE

By: _____
Mayor

Attest: _____
City Clerk

Date: _____

TRI-COUNTY TRAIL COMMISSION

By execution of this statement, I hereby verify that the Tri-County Trail Commission has reviewed and concurs with this First Amendment to Lease Agreement between the Pecatonica Rail Transit Commission and the City of Mineral Point.

By: _____

Witness: _____

Date: _____

PECATONICA RAIL TRANSIT COMMISSION, LESSOR

By: _____
Harvey Kubly, Chairman

Attest: _____
Charles Anderson, Secretary

Date of Commission authorization: _____, 2025

Attachments:

- Exhibit A: Copy of Lease
- Exhibit B: Demised Premises
- Exhibit C: Snow Melt Lot

Exhibit A to First Amendment

Copy of Lease

LEASE AGREEMENT

THIS AGREEMENT is entered into as of this 1st day of March, 2005, by and between the Pecatonica Rail Transit Commission ("Lessor" or "Commission") and the City of Mineral Point ("Lessee" or "City"),

WITNESSETH:

WHEREAS, the lessor is the owner of rail corridor property which is being held under the Federal Rails to Trails Program for future rail use and is currently used for a recreation trail under an agreement with the Tri-County Trail Commission; and

WHEREAS, lessee is a governmental entity and desires to use a portion of the Commission's property for parking purposes; and

NOW, THEREFORE, THE LESSOR AND THE LESSEE DO HEREBY COVENANT AND AGREE AS FOLLOWS:

1. PREMISES AND TERM.

1.1 Demised Premises. Lessor leases to Lessee the following:

(INSERT LEGAL DESCRIPTION)

1.2 The Lessor does hereby lease to the said Lessee the above-named property for the following use only: The improvement, maintenance, and use of an existing public parking lot.

1.3 Term. This lease is for a term of twenty (20) years commencing on March 1, 2005, and ending March 1, 2025.

1.4 Successor Terms. After the initial term, this lease shall automatically renew for one (1) year terms, subject to the right of either party to terminate the lease with or without cause on six (6) month's written notice to the other party as provided herein.

1.5 Termination. The lease shall continue as provided in paragraphs 1.3 and 1.4 or until terminated in accordance with this paragraph or as a result of default as provided under section 10.

a. This lease or any renewal thereof may be terminated by Lessor upon 60 day written notice to the Lessee in the event the property is required for rail use. Lessee is fully aware that the corridor is being held under the Federal Rails to Trails Program for future rail use. Lessee and Lessor agree that in the event of restoration of rail service this lease shall be terminated upon 60 days' notice, and the Lessee shall be responsible for

all costs associated with any corrective measures and modifications, related to Lessee's use, necessary to allow for the reinstallation of the railroad trackage and the reintroduction of rail service.

b. The City currently permits ATV travel on certain streets within the City. In the event the City restricts or limits ATV travel to a greater degree than such travel is allowed on the date of the signing of this lease agreement, the Commission may terminate this lease upon sixty (60) days' notice to the City unless otherwise agreed in writing by the parties hereto.

c. As of the effective date of the termination of this lease, howsoever such termination shall occur under the terms of this lease, Lessee shall vacate the above-described premises, surrender the leased property to Lessor and remove any and all improvements (except as provided under s. 4.2), personal property or equipment belonging to him or her from said premises. Lessee shall restore premises to substantially the same condition as existed at the time he took possession.

2. RENT AND OTHER CONSIDERATION.

2.1 Payments. Lessee shall make a one time payment of Twenty Dollars ($20.00), in advance, as and for rent for the twenty (20) year term of the lease. If this lease is terminated by the Lessee prior to the end of the twenty (20) year term, no portion of the rent shall be refundable. If the lease is terminated by the Lessor prior to the end of the twenty (20) year term, a prorated portion of the rent shall be refunded.

2.2 Snow Melt and Additional Lot. As and for additional consideration, the City will provide use of its "snow melt lot" (with a description of its location) as overflow parking for vehicles hauling ATVs, and will provide improvements for loading and unloading ATVs. The City further agrees to also provide improvements for loading and unloading ATVs to a lot that the Commission may acquire for additional parking for vehicles hauling ATVs.

3. USE.

3.1 Use. Lessee shall use and occupy the demised premises solely for public parking purposes. Lessee shall not use the demised premises in any way which, in the judgment of the Lessor, poses a hazard to the Lessor, the premises, other Lessees, if any, or the property in part or in whole; nor shall Lessee use the demised premises so as to cause damage, annoyance, nuisance or inconvenience to the Lessor, trail users or others. It is expressly agreed that the Lessee shall not permit trailers on the property, nor shall the Lessee permit the loading or unloading of ATVs or other trail vehicles on the property.

3.2 Interference. Lessee agrees that its activities on the property shall in no way interfere with trail activities.

3.3 Prohibition against encumbering property. Lessee shall not encumber the demised premises without the written consent of the other party. Title to and ownership of the leased property, shall at all times remain with Lessor.

4. CARE AND REPAIR OF DEMISED PREMISES.

4.1 Maintenance. Lessee shall commit no waste and shall take good care of the demised premises. Lessee shall, at its own cost and expense, maintain the leased property in good condition and repair and shall not materially alter the leased property without Lessor's written consent. It is understood and agreed that the City plans to make improvements including blacktopping the parking lot. Upon the expiration or termination of this lease or any renewal thereof, Lessee shall vacate the demised premises, remove its property therefrom and forthwith yield and place Lessor in peaceful possession of the leased premises free and clear of any liens, claims or encumbrances and in as good condition as the premises existed at the commencement of this lease, ordinary wear and tear, and damage by fire, act of God, casualty or other cause not due to misuse and neglect by Lessee or Lessee's agents, servants, customers, visitors or permitees excepted.

4.2 Lessee property. All improvements made by Lessee to the demised premises which are or become so attached to the demised premises that they cannot be removed without material injury to the demised premises shall become the property of the Lessor in the event the property returns to the Lessor. Not later than the last day on which Lessee has the right to possession of the premises, Lessee may, nevertheless, remove all Lessee's personal property.

5. ALTERATIONS.

5.1 Lessee shall have the right, at Lessee's expense, from time to time, without Lessor's consent, to make nonstructural alterations, changes, installations, additions or improvements (collectively "changes") in, on, to or about such parts thereof as it shall deem expedient or necessary for its purpose. In blacktopping the parking lot, or performing any other related work, the City shall obtain all necessary state and local approvals prior to construction. Copies of such approvals shall be furnished to the Commission.

6. ASSIGNMENT AND SUBLETTING.

6.1 Lessee shall not sublease, assign, encumber or transfer any interest it may have arising out of this lease to any other person or entity without the written consent of Lessor.

7. TAXES AND ASSESSMENTS.

7.1 In the event real estate or personal property taxes are imposed during the term of this lease as a result of Lessee's use of the demised premises, Lessee shall timely pay the same. In the event any other charge, assessment or tax shall be imposed or levied against Lessor arising out of this agreement, Lessee shall pay the same.

8. INDEMNITY - LIABILITY INSURANCE

8.1 Indemnity. As of the date of commencement of this Lease, Lessee shall indemnify and hold harmless Lessor, its member counties, the Tri-County Trail Commission and their member counties against and from any all liabilities, fines, suits, demands, claims and actions and costs and reasonable expenses of any kind or nature by anyone whomsoever, due to or arising out of any damage, injury or death to person or damage or injury to property occasioned by Lessee's use and occupancy which Lessee may permit or suffer to be made of the demised premises.

8.2 Collateral source. Lessee's liability under paragraph 8.1 shall be reduced by the net proceeds actually collected on an insurance effected by Lessee on the risks in question in said paragraph.

8.3 Liability insurance. The Lessee must obtain, and maintain during the term of this lease, a public liability insurance policy naming the Lessor as an additional insured and providing limits of liability of $500,000 aggregate. A certified true copy of the policy with endorsement, manually countersigned, must be furnished to the Lessor within 15 days from the date of execution of this Lease or the date of commencement of this Lease, whichever is earlier, and annually thereafter. The policy must include the following endorsement: "It is a condition of this policy that the insurance company must furnish written notice to the Pecatonica Rail Transit Commission thirty (30) days in advance of the effective date of any reduction in or cancellation of this policy."

9. NOTICES.

9.1 Any notice, demand, request or other communication hereunder given or made by either party to the other shall be in writing and shall be deemed to be duly given only if personally served on the other party or mailed by first class, postage prepaid regular mail addressed as follows:

(a) if to Lessor, to _____

(b) if to Lessee, to _____

or at such other addresses as Lessor or Lessee, respectively, may designate in writing by notice pursuant to this paragraph.

10. DEFAULT

10.1 Lessor shall have, in its sole discretion, the right to exercise one or more of the following options in the event Lessee fails to perform any term, covenant or condition of this lease:

a. To take possession of the leased property, including the real estate on which said property is located, which possession shall not terminate Lessee's obligations under this lease.
b. To all costs and expenses, including reasonable attorney's fees, Lessor may incur in enforcing any terms and conditions of this lease.
c. Enforce any other remedy it may have at law or under any other document attached hereto.

11. COMPLETE AGREEMENT AND CONSTRUCTION FORM OF AGREEMENT.

11.1 Complete agreement. Both parties acknowledge that no representations, warranties, promises, covenants or undertakings of any kind have been made to either party as an inducement to enter into this lease agreement, other than those expressly set forth herein or in any attachment hereto. This lease is intended to be and is the complete agreement of the parties.

11.2 Paragraph headings. Paragraph headings are for convenience only. They are not part of this lease agreement of the parties and shall not be used in the construction or interpretation thereof.

11.3 Form of agreement. With respect to the form of the lease agreement, both parties assume joint responsibility for the form and composition of each paragraph, and they further agree that this lease agreement shall be interpreted as though each of the parties participated equally in the composition of each and every part thereof.

11.4 Construction. This lease agreement is not to be strictly construed for or against either of the parties. It shall be interpreted simply and fairly with regard to both parties.

11.5 Choice of law. The parties intend this lease agreement to be construed in accordance with the laws of the State of Wisconsin, irrespective of the residence of either party, or regardless of the forum where it may be construed later whether for enforcement, revision, modification or for any other purpose.

11.6 Severability. Both parties agree that in the event any court of competent jurisdiction at any time holds that a portion of this lease agreement is invalid, illegal, unenforceable, void or voidable, the remainder of the lease agreement, to the extent consistent with such holding, shall not be affected thereby and shall continue in full force and effect.

12. MISCELLANEOUS PROVISIONS.

12.1 Revision or modification. Any future revision, modification, amendment or waiver of any of the provisions of this lease agreement shall be effective only if made in writing, dated, signed and executed with the same formality as this lease agreement. Any such revision, modification or amendment shall specifically provide that it is intended to revise, modify, or amend this lease agreement. Failure of either party to insist upon strict performance any of the provisions of this lease agreement shall not be construed as a waiver of any subsequent default of the same or similar nature.

12.2 Access to premises. Lessor may enter the demised premises to make a formal inspection at any reasonable time on reasonable notice to Lessee.

12.3 Parking Ordinances. The City currently has in place parking enforcement ordinances applicable to the leased property. The City represents and agrees that such ordinances shall remain in full force and effect and shall be enforced during the term of this lease agreement unless otherwise agreed in writing by the parties hereto.

13. BINDING EFFECT.

13.1 Binding effect. The provisions of this lease agreement shall apply to, bind and inure to the benefit of the parties hereto and their respective heirs, beneficiaries, personal or legal representatives and assigns.

PECATONICA RAIL TRANSIT COMMISSION, LESSOR

By: _____
Chairman

Attest: _____
Secretary

CITY OF MINERAL POINT, LESSEE

By: _____
Mayor

Attest: _____
City Clerk

TRI-COUNTY TRAIL COMMISSION

By execution of this statement I hereby verify that the Tri-County Trail Commission has reviewed and concurs with this Lease Agreement between the Pecatonica Rail Transit Commission and the City of Mineral Point.

By: _____

Witness: _____

Date of Pecatonica Rail Transit Commission authorization: 1 March 2005

Date of City of Mineral Point Common Council authorization: 3-1-05

Attachments:

- Legal Description of the Demised Premises. (Section 1.1)
- Legal Description of the Snow Melt Lot. (Section 2.2)
- City of Mineral Point's Ordinance(s) related to ATV travel and in effect at the time that this Agreement was approved by the Pecatonica Rail Transit Commission (23 February 2005). (Section 1.5 b.)

ORDINANCE NUMBER 666

AN ORDINANCE AMENDING ORDINANCE NUMBER 578, REGARDING SNOWMOBILE, ALL-TERRAIN VEHICLE, MOTORCYCLE, AND NON-LICENSED MOTORIZED EQUIPMENT TRAIL REGULATIONS.

WHEREAS, the City of Mineral Point, Iowa County, Wisconsin, under Ordinance No. 578, established snowmobile, all-terrain vehicle, motorcycle and non-licensed motorized equipment trail regulations; and

WHEREAS, said Ordinance No. 578 codified said trail regulations as Chapter 32 of the Municipal Code of the City of Mineral Point; and

WHEREAS, the Ordinance and Claims Committee of the Common Council of the City of Mineral Point, at a meeting held on December 1, 2004, recommended that the above referenced Ordinance and Municipal Code chapter be amended with regard to closed seasons and closed hours for all-terrain vehicles, motorcycles and non-licensed motorized equipment in the City of Mineral Point; and

WHEREAS, it is determined to be in the best interests of the residents of the City of Mineral Point, and those persons operating all-terrain vehicles, motorcycles, and unlicensed motorized equipment within the City of Mineral Point, that Section 32.02, and Section 32.03(1) of chapter 32 of the Municipal Code be amended with regard to closed seasons and closed hours for all-terrain vehicles, motorcycles, and unlicensed motorized equipment in the City of Mineral Point;

NOW THEREFORE, the Common Council of the City of Mineral Point does ordain that Ordinance No. 578 and corresponding Sections 32.02 and 32.03(1), of Chapter 32 of the Municipal Code of the City of Mineral Point be amended to read as follows:

Section 32.02. Closed Seasons

No person shall operate an all-terrain vehicle, motorcycle or unlicensed motorized equipment on the trail during such time as the trail is snow covered, in whole or in part, or at such other times as designated or posted as a closed season by the Tri-County Trail Commission.

Section 32.03. Closed Hours

1. The trail shall be closed to all persons during the hours of 1:00 a.m. to 5:00 a.m.

This Ordinance shall take effect after passage and publication thereof, as required by law.

Adopted and passed at the December meeting of the Common Council of the City of Mineral Point, held in the Council Chambers at the Mineral Point Senior Citizens Center, in the City of Mineral Point, Iowa County, Wisconsin, on December 7, 2004.

APPROVED:

Gregory Bennett, Mayor

ATTEST:

Betty Horne, City Clerk Treasurer

ORDINANCE NUMBER 667

AN ORDINANCE AMENDING ORDINANCE NUMBER 663, REGARDING AREAS AND TIMES OF OPERATION OF ALL TERRAIN VEHICLES IN THE CITY OF MINERAL POINT.

WHEREAS, the City of Mineral Point, Iowa County, Wisconsin, under Ordinance No. 663, established areas and times of operation of all-terrain vehicles in the City of Mineral Point; and

WHEREAS, The Ordinance and Claims Committee of the Common Council of the City of Mineral Point, at a meeting held on December 1, 2004, recommended that the above referenced Ordinance and the corresponding Section 7.06(A)(1) of the Traffic Code of the City of Mineral Point be amended with regard to areas and times of operation of all-terrain vehicles in the City of Mineral Point; and

WHEREAS, it is determined to be in the best interests of the residents of the City of Mineral Point and those persons operating all-terrain vehicles within the City of Mineral Point, that said Ordinance and Traffic Code Section be amended;

NOW THEREFORE, the Common Council of the City of Mineral Point does ordain that Ordinance No. 663 and the corresponding Section 7.06(A)(1) of the Traffic Code of the City of Mineral Point be amended to read as follows:

Traffic Code, Section 7.06(A)(1) All-Terrain Vehicle Operation Routes Within the City of Mineral Point:

(A) General.

It shall be unlawful to operate any all-terrain vehicle on public property or on any of the City streets, alleys, parks, parking lots or any other public lands or private lands or parking lots held open to the public, except for those areas designated as all-terrain vehicle routes;

(B) Exceptions

All-terrain vehicles may be operated on designated and marked all-terrain vehicle routes, those routes being as follows:

1. Water Street, from its intersection with the Tri-County Cheese Trail at Old Darlington Road to its intersection with Doty Street; Doty Street, from its intersection with Water Street to its intersection with High Street. The use of these routes is restricted to 1.) obtaining fuel; 2.) parking in designated all-terrain vehicle parking spaces located in either of the two municipal parking lots located between Jail Alley and Doty Street; or 3.) frequenting businesses along the above described routes.

2. Jackson Street from its intersection with Bollerud Street and to its intersection with Commerce Street, only.

(C) Speed.

All-terrain vehicles operated on the above designated routes within the City of Mineral Point are not to exceed a speed of ten miles per hour.

(D) Operational Time Restrictions.

No person shall operate an all-terrain vehicle anywhere within the City of Mineral Point between the hours of 9:00 p.m. and 8:00 a.m.

(E) Violation.

Penalty for violation of this Ordinance shall be a forfeiture of $25 per violation.

This Ordinance shall take effect after passage and publication thereof, as required by law.

Adopted and passed at the December meeting of the Common Council of the City of Mineral Point, held in the Council Chambers at the Mineral Point Senior Citizens Center, in the City of Mineral Point, Iowa County, Wisconsin, on December 7, 2004.

APPROVED:

Gregg Berndt, Mayor

ATTEST:

Betty Horne, City Clerk Treasurer