NOTICE OF COMMISSION MEETING

PLEASE TAKE NOTICE that there will be a regular meeting of the Commission of the Madison Metropolitan Sewerage District at 8 a.m., on Thursday, March 12, 2020, at the Maintenance Facility – Training Room at 1610 Moorland Road, Madison, Wis. 53713. The Commission will consider and may take action on the matters set forth on the attached agenda. If any matter on the agenda is to be considered in closed session of the Commission, please be advised that following the closed session the Commission will reconvene into open session for purposes of taking any action based on the closed session and concluding its agenda.

Date: March 10, 2020

D. Michael Mucha, P.E.
Chief Engineer and Director

Any person who has a qualifying disability as defined by the Americans with Disabilities Act that requires the meeting or materials at the meeting to be in an accessible location or format must contact the chief engineer and director at 608-222-1201, 1610 Moorland Road, Madison, Wis., at least 24 hours prior to the commencement of the meeting so that any necessary arrangements can be made to accommodate each request.

1. Opening
   A. Call to Order
   B. Welcome Commissioner Bookland & Introductions
   C. Welcome Guests
      • Announcements:
         Bob Jacobs and Kody Wright, Locators – Ray Schneider
         Ileana Rodriquez, HR Generalist – Jennifer Peters

2. Oath of Office - New Commissioner Beth Bookland
   Commission Agenda Report

3. Appearances by the Public

4. Consent Calendar
   A. Approval Meeting Minutes from 2-27-2020
   B. Approval of Cash Statement – Operating Fund
   C. Approval of Cash Statement – Capital Projects Fund
   D. Review and Approval of Sewer Extension Plans – Curt Sauser
      Commission Agenda Report
      Attachment 1: Sewer Extension Vicinity Map
      Attachment 2: Sewer Extension Financial Summary
**Attachment 3:** Acacia Ridge Phase 4, City of Madison – Resolution (2020-03-12-R1) & Map

**Attachment 4:** Covered Bridges Residence of Bear Tree Farms, Village of Windsor – Resolution (2020-03-12-R2) & Map

**E. Increase Approved Transaction Amount:** Grass Lake Dike Restoration Design Professional Services (Cardno) – Jeff Klawes

**Commission Agenda Report**

**Attachment 1:** Resolution (2020-03-12-R3)

**F. Expedited Boundary Annexation 2020-01 Monona Grove School District, Village of Cottage Grove – Curt Sauser**

**Commission Agenda Report**

**Attachment 1:** Resolution (2020-03-12-R4)

**Attachment 2:** District Map

**Attachment 3** Legal Description & Map

**Web Link:** Order of Annexation and Exhibits (https://www.madsewer.org/About-Us/Commission)

**G. Award of Contract for Sodium Hypochlorite – Eric Dundee**

**Commission Agenda Report**

**Attachment 1:** Bid Tabulations

**Attachment 2:** Resolution (2020-03-12-R5)

**H. Increase Approved Transaction Amount: I & I Reduction Program Plan Professional Services (Brown & Caldwell) – Jen Hurlebaus**

**Commission Agenda Report**

**Attachment 1:** Resolution (2020-03-12-R6)


**Commission Agenda Report**

**Attachment 1:** Town of Middleton Annexation Request

**Attachment 2:** MMSD Annexation Map

6. **Creation of a Commission Workgroup for the Chief Engineer and Director’s Performance Review – Commissioner Ezra Meyer**

**Commission Agenda Report**

**Attachment 1:** Commission Policy ATT-4

**Attachment 2:** Resolution (2020-03-12-R7)

7. **Update on Chloride Reduction Program – Kathy Lake**

**Commission Agenda Report**

**Attachment 1:** MMSD Chloride Compliance Plan 2020
8. Chief Engineer and Director’s Report
   Items to be covered include but are not limited to:
   A. CED Update – Michael Mucha
      • COVID-19 (Coronavirus) Briefing
      • Dewatering Contract Update
   B. Regulatory/Legal Review – Vanessa Wishart
      Regulatory Review Report
   C. Future Meeting Schedule
      Future Meeting Schedule as of 03-10-2020
9. Future Agenda Topics
10. Other Business allowed by Law
11. Adjournment
COMMISSION AGENDA REPORT
Meeting of March 12, 2019
Oath of Office-New Commissioner Beth Bookland

**Lead Staff:** D. Michael Mucha, Chief Engineer and Director

**Requested Action:** Commissioner Bookland is requested to take the oath of office.

**Attachments:** No attachments.

*The “Oath of Office” and “Statement of Principles” will be signed and notarized the day of the meeting after the oath has been taken.

**Purpose:**
Commissioners take the oath of office before fulfilling the duties of their appointment office.

**Financial Impact:**
None.

**Background:**
Ms. Bookland will take the oath of office on March 12, 2019. The oath is required under Wisconsin Statutes 200.09(2). “Each member of the commission shall take and file the official oath.”

District legal counsel will administer the oath to Ms. Bookland.

**Next Steps:**
Ms. Bookland will serve a three-year term ending on March 12, 2023.
Meeting of the Commissioners of the
Madison Metropolitan Sewerage District

Thursday, February 27 8:00 a.m.
District Maintenance Facility Training Room, 1610 Moorland Road, Madison, WI 53713

Present: Commissioner Tom Hovel
Commissioner Ken Clark
Commissioner Sara Eskrich
Commissioner Grant Foster
Commissioner Ezra Meyer
Commissioner Brad Murphy
Commissioner Mary Swanson
Commissioner Tom Wilson

Excused Absence: None.

Commission Meeting

1. Opening
   A. Call to Order 8 a.m.
   B. Welcome Guests: Greg Fries, City of Madison
   C. Announcements: None.

2. Appearances by the Public: None.

3. Consent Calendar
   A. Approval of Meeting Minutes from 2-13-2020
   B. Review and Approval of Sewer Extension Plans
      New Construction Projects
      • Meadows at Conservancy Place (2020-02-27-R1)
      • McKenna Road improvements (2020-02-27-R2)
   C. Review and Approval of Metrogro Hauling Contracts (2020-02-27-R3)

   Discussion: The 2-13-20 minutes, sewer extension plans and approval of 2020 Metrogro hauling contracts were reviewed and placed on file.

   Action: Commissioner Wilson moved, seconded by Commissioner Clark to approve items A-C of the consent calendar.

   Motion carried.
*Presenter:* Rachel Feil, P.E. Project Engineer I  
*Description:* Ms. Feil requested approval of resolution 2020-02-27-R4 which awards the project to Staab Construction Corporation, at their low bid price of $1,833,000.  
*Discussion:* Ms. Feil presented information on the project which included information on the financial impact, background, analysis and options and next steps. After further discussion, the following action ensued:  

*Action:* Commissioner Wilson moved, seconded by Commissioner Eskrich to approve resolution 2020-02-27-R4.  
Motion carried.

5. **Review and Approval of Construction Phase Engineering Services: Nine Springs Treatment Plant – Headworks Flow Metering Improvements**  
*Presenter:* Rachel Feil, P.E. Project Engineer I  
*Description:* Review and approval of resolution 2020-02-27-R5, awarding construction phase engineering services for the Headworks Flow Metering Improvements to Short Elliott Hendrickson Inc., at a cost not to exceed $87,077.  
*Discussion:* Ms. Feil presented information on the financial impact, background, analysis and options and next steps to the Commission.  

*Action:* Commissioner Meyer moved, seconded by Commissioner Clark to approve resolution 2020-02-27-R5.  
Motion Carried.

6. **Inclusion and Diversity Update**  
*Presenter:* Jenni Peters, Human Resources Manager  
*Description:* Informational presentation  
*Discussion:* Ms. Peters presented to the Commission an annual update on the District diversity and inclusion outcome measures and the District’s efforts to support progress in achieving a more culturally competent and representative workforce.  

*Action:* No action required.

7. **Chief Engineer and Director’s Report**  
A. **CED Update:** Mr. Mucha gave an update to the Commission on the status of the new District Commissioner and reminded Commission members of upcoming policy governance training.  
*Action:* None.  
B. **District Quality Control/Quality Assurance for PFAS Testing Results:** Martin Griffin, Ecosystems Services Director, discussed the memorandum provided to the Commission to address their request for information on the quality assurance elements the District will use when receiving PFAS testing results from lab analysis.  
*Action:* None.
C. Regulatory Report: Paul Kent, Legal Counsel, gave a brief regulatory and legal update to the Commission.
   
   **Action:** None.


   **Action:** None.

E. Future Meeting Schedule:

   **Action:** None.

8. **Future Agenda Topics**
   
   **Action:** None.

9. **Other Business Allowed by Law**

   **Action:** None.

10. **Adjournment**

    **Action:** Commissioner Wilson moved, seconded by Commissioner Clark to adjourn.

    Meeting adjourned at 9:02 a.m.

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Mary Swanson, Secretary

**Future Meetings:**

- Thursday, March 12, 2020
- Thursday, March 26, 2020
- Thursday, April 16, 2020
WHEREAS, plans for sanitary sewer extensions were submitted to the Madison Metropolitan Sewerage District ("the District") for The Meadows at Conservancy Place - Phase 2, in the Village of DeForest, on February 18, 2020, by Grant Pokos of D’Onofrio Kottke and Associates, and

WHEREAS, the project will install 687 feet of 8-inch diameter sanitary sewer on Sunny Spring Way and Crystal Creek Lane. The proposed sewers will serve Lots 1-14, 39-46 and Outlot 1 of the plat of The Meadows at Conservancy Place, and

WHEREAS, conveyance facility and treatment plant connection charges for the lands to be served were paid with district plan no. 2006-085 for River’s Turn – Phase 1, and

WHEREAS, the proposed sanitary sewer extension will connect to the Village of DeForest’s sewerage facilities, and is within the district’s Northeast Interceptor/Waunakee-DeForest extension basin, and

WHEREAS, plan review fees are due, and

WHEREAS, the District has received a sewer extension review letter #175-18-5 from the Capital Area Regional Planning Commission (CARPC) dated July 10, 2018 stating the CARPC staff has reviewed the proposed extension and determined that it is consistent with the urban service area provisions of the Dane County Water Quality Plan and the Dane County Land Use and Transportation Plan and is consistent with the conditions of resolution DCRPC #855, which added this area to the Northern Urban Service Area, and

WHEREAS, the Chief Engineer and Director of the district has recommended the approval of said plans,

THEREFORE, BE IT RESOLVED, that the plans for sanitary sewer extensions for The Meadows at Conservancy Place - Phase 2, in the Village of DeForest, submitted on February 18, 2020, by Grant Pokos of D’Onofrio Kottke and Associates, be approved subject to the following conditions:
1. That the Village of DeForest shall pay the plan review fee of $1,550 to the District within 30 days of receiving an invoice for the fee.

2. That the Village of DeForest shall require the presence of an engineer or an inspector on the construction of said sewer extensions who shall make a record showing in detail the construction as built and shall furnish the District with as-built plans in the case of any significant deviations from the original design.

3. That the construction, operation, maintenance and use of said sewer extensions shall be in accordance with the lawful rules and regulations of the District and with the applicable State of Wisconsin plumbing and sewerage codes.

4. That if construction of the sewer extensions covered by said plans has not commenced within four years following the approval date of this resolution, this approval shall become void and new plans shall be submitted. If construction has commenced but has not been completed within the four-year approval period, the unbuilt portion must be submitted for reapproval if it is a significant portion of the project and would require DNR approval.

The above resolution was adopted by the Commissioners of the Madison Metropolitan Sewerage District at their meeting held at the District on February 27, 2020.

MADISON METROPOLITAN SEWERAGE DISTRICT

Attested by:

Thomas Hovel, President

Mary Swanson, Secretary
MCKENNA ROAD IMPROVEMENTS
2020-02-27-R2

WHEREAS, plans for sanitary sewer extensions were submitted to the Madison Metropolitan Sewerage District ("the District") for McKenna Road Improvements, in the City of Monona, on February 13, 2020, by Joshua Straka of Strand Associates on behalf of the City of Monona, and

WHEREAS, the project will replace approximately 1,500 feet of 8-inch diameter sanitary sewer on McKenna Road and Maywood Road. The sewers have been determined to be in poor condition and are being replaced in conjunction with the street reconstruction project, and

WHEREAS, two District owned structures, MH07-118A and MH07-118B, are within the project limits and may need adjustment to match the final surface grades, and

WHEREAS, no new lands will be served as part of this project, and

WHEREAS, the proposed sanitary sewer extension will connect to the City of Monona’s sanitary sewerage facilities, and is within the District’s East Interceptor basin, and

WHEREAS, conveyance facility connection charges for the areas being served have been paid, and

WHEREAS, plan review fees are waived for street reconstruction projects, and

WHEREAS, the District has received a sewer extension review letter #6-20-5 from the Capital Area Regional Planning Commission (CARPC) dated February 12, 2020 stating the CARPC staff has reviewed the proposed extension and determined that it is consistent with the urban service area provisions of the Dane County Water Quality Plan, and

WHEREAS, the Chief Engineer and Director of the District has recommended the approval of said plans,

THEREFORE, BE IT RESOLVED, that the plans for sanitary sewer extensions for McKenna Road Improvements, in the City of Monona, submitted on February 13, 2020, by Joshua Straka of Strand Associates on behalf of the City of Monona, be approved subject to the following conditions:
1. That the City of Monona shall invite the District to the preconstruction conference. Contact Ray Schneider at (608) 347-3628 or RayS@madsewer.org to coordinate.

2. That the City of Monona shall require the presence of an engineer or an inspector on the construction of said sewer extensions who shall make a record showing in detail the construction as built and shall furnish the District with as-built plans in the case of any significant deviations from the original design.

3. That the construction, operation, maintenance and use of said sewer extensions shall be in accordance with the lawful rules and regulations of the district and with the applicable State of Wisconsin plumbing and sewerage codes.

4. That if construction of the sewer extensions covered by said plans has not commenced within four years following the approval date of this resolution, this approval shall become void and new plans shall be submitted. If construction has commenced but has not been completed within the four-year approval period, the unbuilt portion must be submitted for reapproval if it is a significant portion of the project and would require DNR approval.

The above resolution was adopted by the Commissioners of the Madison Metropolitan Sewerage District at their meeting held at the District on February 27, 2020.

MADISON METROPOLITAN SEWERAGE DISTRICT

Attested by:

Thomas Hovel, President

Mary Swanson, Secretary
Approval of 2020 Metrogro Hauling Contracts  
2020-02-27-R3

WHEREAS, thirty-four to thirty-eight million gallons of Metrogro produced each year is hauled to area farm fields by semi-trucks pulling tanker trailers, and applied by in field applicators, and

WHEREAS, the District owns tanker trailers which are pulled by contracted semi-trucks with independent contractors, and

WHEREAS, the District owns in-field applicators, all of which are operated by independent contractors, and

WHEREAS, the 2020 approved operating budget contains $740,000 for contract hauling and application operations, and

WHEREAS, eleven contractors have already been chosen through a submittal scoring process to fill sixteen semi-tractor and five equipment operator needs, and

WHEREAS, the 2020 hauling contracts will use the standard contract shown in Attachment 2, and

WHEREAS, the Chief Engineer and Director of the District has recommended the approval of the contract, and

WHEREAS, the project will be financed by the 2020 approved operating budget.

NOW, THEREFORE, BE IT RESOLVED by the Madison Metropolitan Sewerage District Commission, and following consideration of the above recitals which are incorporated by reference, as follows:

1. The Commission awards contracts for the 2020 Metrogro hauling season to the contractors in Attachment 3 and authorizes expenditures under these contracts up to $740,000.

2. Following completion of all required conditions, the Commission authorizes the Chief Engineer and Director to execute hauling contracts on behalf of the District.
MADISON METROPOLITAN SEWERAGE DISTRICT

Attested by:

Thomas Hovel, President

Mary Swanson, Secretary

Incorporated by Reference:
Attachment 2. 2020 Hauling Contract
Attachment 3. Contracted Companies

The above resolution was adopted by the Commissioners of the Madison Metropolitan Sewerage District at their meeting held in the District office on February 27, 2020.
Award of Contract: Nine Springs Treatment Plant-Headworks Flow Metering Improvements
2020-02-27-R4

WHEREAS, the Madison Metropolitan Sewerage District (the “District”) has determined that wastewater processes at the Nine Springs Wastewater Treatment Plant Headworks Facility, including influent flow metering, fine screen solids removal and disposal of screenings have presented operational and maintenance difficulties, and

WHEREAS, it is desirable that these operational and maintenance difficulties be resolved and improvements to the reliability of plant flow metering accuracy for customer billing be accomplished, and

WHEREAS, the Nine Springs Treatment Plant-Headworks Flow Metering Improvements project (the “project”) includes improvements to the headworks influent flow system at the Nine Springs Wastewater Treatment Plant for resolving operational and maintenance difficulties and reliability of the metering, and

WHEREAS, the project was included in the District’s 2020 Capital Improvements Plan and budget, and

WHEREAS, Short Elliott Hendrickson Inc. prepared plans and specifications for the project, and

WHEREAS, District staff advertised the project as required by Wisconsin Statutes and the District’s procurement policies, and

WHEREAS, the scope of work includes yard piping, process piping, structural, electrical and sitework modifications required to lower the elevation of the existing venturi meters and raw wastewater influent force mains at the headworks facility of the Nine Springs Wastewater Treatment Plant, and

WHEREAS, bids received were within the authorized total project cost in the capital budget, and

WHEREAS, District staff reviewed bidders’ proof of responsibility, including but not limited to standard information regarding financial ability, equipment, experience in the work prescribed in the public contract and other matters that the District requires for the protection and welfare of the public in the performance of the project, all as permitted by Wis. Stats. s. 66.0901(2) and District policy, and thereby pre-qualified the bidders, and

WHEREAS, the District received two competitive bids from pre-qualified bidders and noted no bid abnormalities among the bids received, and
WHEREAS, the lowest responsible bid contains all documentation required by law and District policy, including, but not limited to, bid security, and

WHEREAS, the project will be financed by a Clean Water Fund loan.

NOW, THEREFORE, BE IT RESOLVED by the Madison Metropolitan Sewerage District Commission, and following consideration of the above recitals which are incorporated by reference, as follows:

1. The Commission awards the contract for Nine Springs Treatment Plant-Headworks Flow Metering Improvements project to Staab Construction Corporation, at its low bid price of $1,833,000.

1. Following completion of all required conditions, the Commission authorizes the Chief Engineer and Director to execute the contract on behalf of the District.

The above resolution was adopted by the Commissioners of the Madison Metropolitan Sewerage District at their meeting held in the District office on February 27, 2020.

MADISON METROPOLITAN SEWERAGE DISTRICT COMMISSION

Attested by:

Thomas D. Hovel, President

Mary Swanson, Secretary
Approval of Construction Phase Engineering Services: 
Nine Springs Treatment Plant-Headworks Flow Metering Improvements 
2020-02-27-R5

WHEREAS, the Madison Metropolitan Sewerage District (the “District”) has determined that wastewater processes at the Nine Springs Wastewater Treatment Plant Headworks Facility, including influent flow metering, fine screen solids removal and disposal of screenings have presented operational and maintenance difficulties, and

WHEREAS, it is desirable that these operational and maintenance difficulties be resolved and improvements to the reliability of plant flow metering accuracy for customer billing be accomplished, and

WHEREAS, the Nine Springs Treatment Plant Headworks Flow Metering Improvements project (the “project”) includes improvements to the headworks influent flow system at the Nine Springs Wastewater Treatment Plant for resolving operational and maintenance difficulties and reliability of the metering, and

WHEREAS, the project was included in the District’s 2020 Capital Improvements Plan and budget, and

WHEREAS, Short Elliott Hendrickson Inc. is the engineer of record for this project and formally approved the plans/specifications, and

WHEREAS, Short Elliott Hendrickson Inc. knows the details associated with the work and are best-suited to perform the construction phase engineering services required, and

WHEREAS, District staff does not have the resources to perform the work, and

WHEREAS, costs for construction phase engineering services were included in the District’s Capital Improvements Plan and capital budget, and

WHEREAS, District staff prepared a request for proposal for this work, and

WHEREAS, District staff reviewed the proposal from Short Elliott Hendrickson Inc., and

WHEREAS, the cost of the construction-phase engineering services is within an acceptable range when compared with past District treatment plant projects and is within budget, and

WHEREAS, award of the professional services to Short Elliott Hendrickson Inc. would be consistent with District procurement practice.
NOW, THEREFORE, and following consideration of the above recitals which are incorporated by reference, it is hereby resolved by the Madison Metropolitan Sewerage District Commission, as follows:

1. The Commission awards the construction phase engineering professional services for the Nine Springs Treatment Plant Headworks Flow Metering Improvements project to Short Elliott Hendrickson Inc. in the amount of $87,077.

2. As set forth in the Commission Transaction Approval Authority Policy, any amendments to the work that exceed 10 percent of the proposed price will require Commission approval.

3. The Commission authorizes the Chief Engineer and Director to execute a professional services agreement for this work on behalf of the District.

The above and foregoing resolution 2020-02-27-R5 was duly adopted at a meeting of the Madison Metropolitan Sewerage District Commission on February 27, 2020.

MADISON METROPOLITAN SEWERAGE DISTRICT COMMISSION

Attested by:

[Signatures]

Thomas D. Hovel, President

Mary Swanson, Secretary
# Madison Metropolitan Sewerage District
## Cash Statement Operating Fund
### For 03/12/20 Commission Meeting
#### Balance as of 03/06/20

| Available Cash Balance Through Check No. | 124403 | 543,672.52 |
| Plus/Less Adjustments | - | - |
| **Total** | **$543,672.52** |

### Add Receipts

- **Transfers & Interest**: $500,000.00
- **Local Government Investment Pool**: $-500,000.00
- **Wells Fargo Savings**: $500,000.00
- **Construction Checking**: $0.00
- **Septage, Sewer Service & Station Charges**: $8,486,465.39
- **Rent Receipts**: $10,435.00
- **Misc. Receipts**: $41,329.27

| Less Disbursements | 7,500,000.00 |
| **Transfers & Interest**: | |
| **Local Government Investment Pool**: $5,000,000.00 |
| **Wells Fargo Savings**: $2,500,000.00 |
| **Construction**: $0.00 |
| **Adaptive Management**: $0.00 |
| **Accounts Payable Vouchers**: $925,547.70 |
| **Other Disbursements**: $389,291.53 |
| **Payroll**: $435,416.93 |

### Available Cash Balance Through Check No. | 124637 | $333,646.02 |

### Current Investments

**LGIP**
- 2/7/20 Balance - Gov't Investment Pool: $6,916,436.13
- Transfer from Operating Fund: $5,000,000.00
- Transfer to Sinking Fund - Debt Services xfr.: $-5,000,000.00
- Transfer to Operating Fund: $-5,000,000.00
- Interest - March 1.62%: $12,858.83

| 3/6/20 Balance - Gov't Investment Pool | **$11,929,294.96** |

**Wells Fargo Savings**
- Beginning balance: $172,755.98
- 2/7/20 Balance - WFS: $6,602.83
- Transfer to Operating Checking: $-500,000.00
- Transfer from Operating Checking: $-2,500,000.00
- Transfer to Construction: $-1,300,000.00
- Transfer - Fleet Management fund: $-195,000.00
- Interest - March 0.0173%: $184.33

| 3/6/20 Balance - WFS | **$511,787.16** |

**Fleet M.**
- 2/7/20 Balance - Fleet Management Fund: $166,153.15
- Activity-Deposit - Annual fund: $195,000.00
- 3/6/20 Balance - Fleet Management Fund: $361,153.15

### Ending balance
- $872,940.31

### Total All Investments
- $12,802,352.27

---

**Chief Engineer & Director**

Madison Metropolitan Sewerage District directs the Treasurer of said District to sign or cause to be signed by facsimile checks in accordance with the following list being paid by Operating Fund Checks Nos. 124404 through 124637.

**by**

**President**

**Acknowledged:**

**City Treasurer**

**Secretary**

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18
# Cash Receipts, Adjustments & Wire Transfers for Operating Fund
## March Statement

### RECEIPTS:

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<th>Description</th>
<th>Amount</th>
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<tr>
<td>Transfers &amp; Interest</td>
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<td>Local Government Investment Pool (LGIP)</td>
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<td>Transfer from Construction</td>
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<tr>
<td>Wells Fargo Savings</td>
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<td><strong>Total - Transfers &amp; Interest</strong></td>
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<tr>
<td>Sewer Service &amp; Station Charges</td>
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<td>Septage Disposal</td>
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<td>Sewer Services</td>
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<td>Pretreatment</td>
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<td>Rent Receipts</td>
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<td>Jeff Klawes</td>
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<td>Thomas Mitchell</td>
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<td>Roy Johnson</td>
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<td>Uphoff Farms</td>
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<td>Debra Iglesias</td>
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<td><strong>Total - Rent Receipts</strong></td>
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<td>Direct Connection</td>
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<td>Permit &amp; Annexation</td>
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<td>Lab Fees</td>
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<td><strong>Total - Misc. Receipts</strong></td>
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### ADJUSTMENTS:

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<td>Transfer to LGIP General</td>
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<tr>
<td>Transfer to WF Savings</td>
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<td>Transfer to Construction</td>
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<td>Accounts Payable Vouchers &amp; WF CC</td>
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<td>Other Disbursements</td>
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<td>Federal &amp; State Taxes Wire Transfers</td>
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<td>ICMA Wire Transfers</td>
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| Payroll Checks                                   |            |
| 01/27/2020 to 02/09/2020                          | 217,369.11  |
| 02/10/2020 to 02/23/2020                          | 218,047.82  |
| **Total - All Payrolls**                          | 435,416.93  |
| **Total - Disbursements**                         | 9,248,256.16|

Refer to disbursement report for itemized detail.

Note: All figures are in USD.

19
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**DISBURSEMENTS**

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# DISBURSEMENTS

**Bank 5**  
**Date: 02/08/20 to 03/06/20**

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<td>$50.00</td>
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<tr>
<td>1/6/2020</td>
<td>Wisconsin Safety Council</td>
<td>Membership Fee</td>
<td>$120.00</td>
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<tr>
<td>1/28/2020</td>
<td>Wisconsin wastewater operators Assoc</td>
<td>Expo fees</td>
<td>$130.00</td>
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<td>1/22/2020</td>
<td>WWOA</td>
<td>WWOA Conference</td>
<td>$99.00</td>
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**Total Amount:** $8,022.77
### Available Cash Balance Through Check No. 10454

<table>
<thead>
<tr>
<th>Available Cash Balance Through Check No.</th>
<th>$106,169.06</th>
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#### Plus/Less Adjustments

<table>
<thead>
<tr>
<th>Net Available Cash Balance</th>
<th>106,169.06</th>
</tr>
</thead>
</table>

### Add Receipts

- **Transfers & Interest**: $1,440,000.00
- **Interceptor Connection Charges**: -

**Net Available Cash Balance**: $1,440,000.00

### Less Disbursements

- **Transfers & Interest**: $1,329,837.85
- **Accounts Payable Vouchers**: $205,865.60
- **Other Disbursements**: $(1,535,703.45)

**Available Cash Balance Through Check No. 10461**: $10,465.61

### Current Investments

<table>
<thead>
<tr>
<th>Investment</th>
<th>Balance</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>LGIP</td>
<td>4,906,025.86</td>
<td>Balance - Local Gov't Investment Pool</td>
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<tr>
<td></td>
<td></td>
<td>Withdrawals to construction checking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interest - March 1.62%</td>
</tr>
<tr>
<td></td>
<td>6,296.06</td>
<td>3/6/20 Balance - Gov't Investment Pool</td>
</tr>
<tr>
<td>Dana</td>
<td>67,177.70</td>
<td>Balance - Dana Investments</td>
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<tr>
<td></td>
<td></td>
<td>Transfer to LGIP Construction</td>
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<tr>
<td></td>
<td></td>
<td>Transfer Fee</td>
</tr>
<tr>
<td></td>
<td>301.99</td>
<td>Interest - March 5.39%</td>
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<tr>
<td></td>
<td></td>
<td>3/6/20 Balance - Dana Investments</td>
</tr>
<tr>
<td>WF</td>
<td>200,345.21</td>
<td>Balance - Wells Fargo Savings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transfer from WF General savings</td>
</tr>
<tr>
<td></td>
<td>1,300,000.00</td>
<td>Transfer to Construction Checking</td>
</tr>
<tr>
<td></td>
<td>(1,440,000.00)</td>
<td>CWF-Loan Closing Reimbursement</td>
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<tr>
<td></td>
<td>63.68</td>
<td>Interest - March .032%</td>
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<tr>
<td></td>
<td></td>
<td>3/6/20 Balance - Wells Fargo Savings</td>
</tr>
</tbody>
</table>

**Total All Investments**: $5,040,210.50

---

**Chief Engineer & Director**

Madison Metropolitan Sewerage District directs the Treasurer of said District to sign or cause to be signed by facsimile checks in accordance with the following list being paid by Capital Projects Fund Checks Nos. 10455 through 10461 inclusive.

Signed by: ________________________________

President

Acknowledged: ________________________________

City Treasurer

Acknowledged: ________________________________

Secretary
# Cash Receipts, Adjustments & Wire Transfers for Capital Projects Fund
## March 2020

## ADJUSTMENTS:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total - Adjustments</td>
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</table>

## RECEIPTS:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfers &amp; Interest</td>
<td></td>
</tr>
<tr>
<td>Transfer from WF Savings Fund</td>
<td>1,440,000.00</td>
</tr>
<tr>
<td>Transfer from LGIP</td>
<td></td>
</tr>
<tr>
<td>Transfer from General</td>
<td></td>
</tr>
<tr>
<td><strong>Total - Transfers &amp; Interest</strong></td>
<td><strong>$ 1,440,000.00</strong></td>
</tr>
<tr>
<td>Interceptor Connection Charges</td>
<td></td>
</tr>
<tr>
<td><strong>Total - Interceptor Connection Charges</strong></td>
<td><strong>$ -</strong></td>
</tr>
<tr>
<td>Misc. - Other Receipts</td>
<td></td>
</tr>
<tr>
<td><strong>Total - Misc. Other receipts</strong></td>
<td><strong>$ -</strong></td>
</tr>
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</table>

**Total - All Receipts** $1,440,000.00

## DISBURSEMENTS:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Transfers &amp; Interest</td>
<td></td>
</tr>
<tr>
<td>Transfer to WF Savings Fund</td>
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<tr>
<td>Transfer to General</td>
<td>614.32</td>
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<tr>
<td>Transfer to CWF</td>
<td>1,329,223.53</td>
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<tr>
<td><strong>Total - Transfers &amp; Interest</strong></td>
<td><strong>1,329,837.85</strong></td>
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<tr>
<td>Accounts Payable Vouchers Bank 6</td>
<td>205,865.60</td>
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<tr>
<td>Refer to disbursement report for itemized detail</td>
<td></td>
</tr>
<tr>
<td>Voided transactions</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total -AP Vouchers</strong></td>
<td><strong>205,865.60</strong></td>
</tr>
<tr>
<td>Other Disbursements</td>
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</tr>
<tr>
<td><strong>Total -Other Disbursements</strong></td>
<td><strong>-</strong></td>
</tr>
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</table>

**Total - All disbursements** $1,535,703.45

The Commission authorizes the Chief Engineer & Director to approve wire payments for construction related work, as detailed below.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>CD Smith Construction - PS7</td>
<td>568,555.58</td>
</tr>
<tr>
<td>Speedway Sand &amp; Gravel - NEI Truax Extension Relief</td>
<td>1,172,176.36</td>
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<tr>
<td></td>
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**Total - $1,740,731.94**
<table>
<thead>
<tr>
<th>Invoice</th>
<th>Company</th>
<th>Description</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>10455</td>
<td>1901 Inc.</td>
<td>Piping Improv Proj</td>
<td>11,091.25</td>
</tr>
<tr>
<td>10456</td>
<td>BROWN AND CALDWELL</td>
<td>infiltration program</td>
<td>9,757.67</td>
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<tr>
<td>10457</td>
<td>JF AHERN CO</td>
<td>PS 11&amp;12 rehabilitation</td>
<td>20,000.00</td>
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<tr>
<td>10458</td>
<td>MSA PROFESSIONAL SERVICES</td>
<td></td>
<td>32,466.90</td>
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<tr>
<td>10459</td>
<td>Murphy Pipeline Contractors, Inc.</td>
<td>PS 10 rehabilitation</td>
<td>10,000.00</td>
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<tr>
<td>10460</td>
<td>SHORT ELLIOTT HENDRICKSON INC</td>
<td>Nine springs headworks</td>
<td>8,599.86</td>
</tr>
<tr>
<td>10461</td>
<td>STRAND ASSOCIATES INC</td>
<td>PS13 &amp;14 rehabilitation</td>
<td>113,949.92</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>205,865.60</strong></td>
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</table>
COMMISSION AGENDA REPORT
Meeting of March 12, 2020
Review and Approval of Sanitary Sewer Extensions

Lead Staff: Curt Sauser, Engineering Technician

Requested Action: Adopt resolutions 2020-03-12-R1 and 2020-03-12-R2 approving the sanitary sewer extension plans.

Attachments:
Attachment 1: 2020-03-12 Sewer Extension Vicinity Map
Attachment 2: 2020-03-12 Sewer Extension Financial Summary
Attachment 3: Acacia Ridge– Resolution 2020-03-12-R1 & Map
Attachment 4: Covered Bridges Residences– Resolution 2020-03-12-R2 & Map

Financial Impact:
A plan review fee of $1,550 will be due for the “new construction” projects for external customers which propose to install new publicly owned sewers. Conveyance facility and treatment plant connection charges will also be due for the lands which can be served from the sewers being installed, as identified above. A plan review fee is not charged for reconstruction projects.

Background:
The District is directed under Section 200.11(b) of the Wisconsin Statutes and NR108.04(4) of the Wisconsin Administrative Code to review and approve any proposed sanitary sewerage system construction or installation projects within the Madison Metropolitan area for which Wisconsin Department of Natural Resources approval is required.

It is requested that the Commission adopt resolutions approving sanitary sewer extension plans that were reviewed by staff and placed on file with the District.

New Construction Projects:
• Acacia Ridge Phase 4, City of Madison
• Covered Bridges Residences of Bear Tree Farms, Village of Windsor
Analysis and Options:
Recommendation:
Adopt resolutions approving the sewer extension plans.

Key consideration:
• Plans have been reviewed by the planning department and are acceptable.

Option 1:
Approve sewer extensions, with modifications determined by the Commission.

Key consideration:
• The Commission may choose to place conditions on the approval, as necessary.

Option 2:
Other options brought forward by the Commission.

Next Steps:
Upon Commission approval, plans will be forwarded to the Wisconsin DNR for final approval, prior to construction.
Covered Bridge Residences of Bear Tree Farms
Village of Windsor

Acacia Ridge Phase 4
City of Madison
### Sewer Extension - Resolution Approvals - Year 2020

<table>
<thead>
<tr>
<th>Meeting Apvl Date</th>
<th>Sewer Plan Agenda Item</th>
<th>Sewer Extension</th>
<th>Community</th>
<th>Proposed Use</th>
<th>Length and Size</th>
<th>Plan Review Fee</th>
<th>CFCC (Conveyance Facility Charges)</th>
<th>TPCC (Treatment Plant Charges)</th>
<th>Sewer Plan Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/12/2020</td>
<td>a. Acacia Ridge Phase 4</td>
<td>City of Madison</td>
<td>33 Residential Lots</td>
<td>919’ - 8” 297’ - 10”</td>
<td>1,550.00</td>
<td>32,180.82</td>
<td>10,047.86</td>
<td></td>
<td>43,778.68</td>
</tr>
<tr>
<td>3/12/2020</td>
<td>b. Covered Bridge Residences of Bear Tree Farms</td>
<td>Village of Windsor</td>
<td>6 multifamily lots and 1 outlot</td>
<td>2,188’ - 8”</td>
<td>1,550.00</td>
<td>100,877.95</td>
<td>47,873.08</td>
<td>150,301.03</td>
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</table>

2020 Charges Approved: Current Meeting

<table>
<thead>
<tr>
<th></th>
<th>CFCC</th>
<th>TPCC</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Total Approved</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Previous Total Approved (by Resolution)

<table>
<thead>
<tr>
<th></th>
<th>CFCC</th>
<th>TPCC</th>
<th>Total</th>
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<tbody>
<tr>
<td>Current Total Approved</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Actual vs. Budget comparison

<table>
<thead>
<tr>
<th></th>
<th>Plan Review</th>
<th>CFCC &amp; TPCC</th>
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</thead>
<tbody>
<tr>
<td>2020 Income: Actual Collected</td>
<td>$6,200.00</td>
<td>$339,530.37</td>
</tr>
<tr>
<td>2020 Income: Budgeted</td>
<td>$70,000.00</td>
<td>$2,750,000.00</td>
</tr>
<tr>
<td>Percent of Budget</td>
<td>9%</td>
<td>12%</td>
</tr>
</tbody>
</table>

---

**Day of the year:** 68

**% Yr passed by:** 19%
WHEREAS, plans for sanitary sewer extensions were submitted to the Madison Metropolitan Sewerage District (the “District”) for Acacia Ridge Phase 4, in the City of Madison, on February 27, 2020, by Mark Moder, City Engineering Division, and

WHEREAS, the project consists of installing 1,216 feet of 8-inch and 10-inch diameter sanitary sewer on Watts Road, Stone Arbor Trail and Highland Gate Way. The proposed sewers will provide service to lots 31-37, 50-56, 65-74, 90-92 and 100-105, and are hereinafter referred to as the “phase 4 lots”, and

WHEREAS, lots 48-49, 57, 64 and 106-107 of the plat of Acacia Ridge are adjacent to proposed sewers, but they are not included within the City’s development agreement for phase 4. Said lots are not being developed and connecting to the public sewer system at this time, and are hereinafter referred to as the “deferred lots”, and

WHEREAS, the District approved sewer extension plans for Acacia Ridge Phase 1 on February 28, 2019 as plan# 2019-017. The phase 1 project installed sewers to serve some of the lots being developed by the current phase 4 project. The City of Madison recorded document 5518457 on September 3, 2019 which restricted development on lots 35-37, 72-74, 90-92 and 100-102 in phase 1 until District connection charges were paid. These lots are hereinafter referred to as the “phase 1 restricted lots”, and

WHEREAS, the proposed sanitary sewer extension will connect to City of Madison’s sanitary sewerage facilities and is within the District’s Lower Badger Mill Creek Interceptor basin, and

WHEREAS, conveyance facility connection charges and treatment plant connection charges for the phase 4 lots have not been paid, and

WHEREAS, plan review fees are due, and

WHEREAS, the District has received a sewer extension review letter #6-20-7 from the Capital Area Regional Planning Commission (CARPC) dated March 5, 2020 stating the CARPC staff has reviewed the proposed extension and determined that it is consistent with the urban service area provisions of the Dane County Water Quality Plan and consistent with the conditions of resolution DCRPC #1026, which added this area to the Central Urban Service Area, and

WHEREAS, the Chief Engineer and Director of the District has recommended the approval of said plans,
THEREFORE, BE IT RESOLVED, that the plans for sanitary sewer extensions for Acacia Ridge Phase 4, in the City of Madison, submitted on February 27, 2020, by Mark Moder, City Engineering Division, be approved subject to the following conditions:

1. That the City of Madison shall pay the plan review fee of $1,550 to the District within 30 days of receiving an invoice for the fee.

2. That the aforementioned deferred lots may not be connected to the public sewerage system at this time. Prior to installation of the proposed sewers, the City of Madison shall record a document with the Dane County Register of Deeds, indicating that District connection charges for the deferred lots have not been paid. Said deferred lots are not to be connected to the public sewerage system until appropriate conveyance facility connection charges and treatment plant connection charges have been paid. If said document is not recorded within six months of approval of this resolution, conveyance facility and treatment plant connection charges on the deferred lots shall be due by the City of Madison.

3. That prior to installation of the proposed sanitary sewers, the City of Madison shall have paid to the District the sum of $42,228.68 for payment of $32,180.82 in Lower Badger Mill Creek Interceptor basin conveyance facility connection charges and $10,047.86 in treatment plant connection charges for the lands to be served; said lands being the aforementioned phase 4 lots.

4. That payment of the aforementioned conveyance facility and treatment plant connection charges shall be made to the District within six months of the date of approval of this resolution. If payment in full is not received by the District within six months of the date of this resolution, the approval shall become void and new plans shall be submitted.

5. That conveyance facility and treatment plant connection charges are adjusted from time to time and said connection charges will be due based on the rate in place at the time at which the payment is made.

6. That upon full payment of the conveyance facility connection charges and treatment plant connection charges aforementioned in condition #3, the District shall endorse the City of Madison in recording a document which releases any restrictions on the phase 1 restricted lots imposed by document 5518457.

7. That if said connection charges remain unpaid after construction of said sewer extensions, a late fee of 0.5 percent of the amount due shall be charged to the City of Madison for each month or partial month thereafter following connection. A one-time $500 administrative fee shall also be charged.
8. That the City of Madison shall require the presence of an engineer or an inspector on the construction of said sewer extensions who shall make a record showing in detail the construction as built and shall furnish the District with as-built plans in the case of any significant deviations from the original design.

9. That the construction, operation, maintenance and use of said sewer extensions shall be in accordance with the lawful rules and regulations of the District and with the applicable State of Wisconsin plumbing and sewerage codes.

10. That if construction of the sewer extensions covered by said plans has not commenced within four years following the approval date of this resolution, this approval shall become void and new plans shall be submitted. If construction has commenced but has not been completed within the four-year approval period, the unbuilt portion must be submitted for reapproval if it is a significant portion of the project and would require DNR approval.

The above resolution was adopted by the Commissioners of the Madison Metropolitan Sewerage District at their meeting held at the District on March 12, 2020.

MADISON METROPOLITAN SEWERAGE DISTRICT

Attested by:

______________________________  ________________________________
Thomas Hovel, President        Mary Swanson, Secretary
WHEREAS, plans for sanitary sewer extensions were submitted to the Madison Metropolitan Sewerage District for Covered Bridge Residences of Bear Tree Farms, in the Village of Windsor, on February 27, 2020, by Andrew Mears of Vierbicher Associates, and

WHEREAS, the project consists of installing 2,188 feet of 8-inch diameter sanitary sewer within a public sanitary sewer easement. The proposed sewers will provide service to lots 1-6 and outlot 1 of two unrecorded certified survey maps which subdivide lots 1-3 of Bear Tree Farms, and

WHEREAS, the proposed sanitary sewer extension will connect to Village of Windsor’s sanitary sewerage facilities and is within the district’s Northeast Interceptor/Highway 19 extension basin, and

WHEREAS, a variance is being requested from DNR Chapter NR 110.13(3)(a) by the applicant for some of the proposed sewers where manholes will not be placed at the end of each sewer line. The applicant notes that the locations without manholes will be future connection, and will be capped or plugged and no service will be provided until a manhole is installed under a DNR approved project, and

WHEREAS, conveyance facility connection charges and treatment plant connection charges for the lands to be served have not been paid, and

WHEREAS, plan review fees are due, and

WHEREAS, the District has received a sewer extension review letter #175-20-2 from the Capital Area Regional Planning Commission (CARPC) dated February 27, 2020 stating the CARPC staff has reviewed the proposed extension and determined that it is consistent with the urban service area provisions of the Dane County Water Quality Plan and consistent with the conditions of Resolution CARPC No. 2012-2, which added this area to the Northern Urban Service Area, and

WHEREAS, the Chief Engineer and Director of the District has recommended the approval of said plans,

THEREFORE, BE IT RESOLVED, that the plans for sanitary sewer extensions for Covered Bridge Residences of Bear Tree Farms, in the Village of Windsor, submitted on February 27, 2020, by Andrew Mears of Vierbicher Associates, be approved subject to the following conditions:
1. That the Village of Windsor shall pay the plan review fee of $1,550 to the District within 30 days of receiving an invoice for the fee.

2. That prior to installation of the proposed sanitary sewers, the Village of Windsor shall have paid to the District the sum of $148,730.17 for payment of $100,863.80 in Northeast Interceptor/Highway 19 extension basin conveyance facility connection charges and $47,866.37 in treatment plant connection charges for the lands to be served; said lands being lots 1-6 and outlot 1 of two unrecorded certified survey maps which subdivide lots 1-3 of Bear Tree Farms.

3. That payment of the aforementioned conveyance facility and treatment plant connection charges shall be made to the District within six months of the date of approval of this resolution. If payment in full is not received by the District within six months of the date of this resolution, the approval shall become void and new plans shall be submitted.

4. That conveyance facility and treatment plant connection charges are adjusted from time to time and said connection charges will be due based on the rate in place at the time at which the payment is made.

5. That if said connection charges remain unpaid after construction of said sewer extensions, a late fee of 0.5 percent of the amount due shall be charged to the Village of Windsor for each month or partial month thereafter following connection. A one-time $500 administrative fee shall also be charged.

6. That if lot areas shown on the final, recorded certified survey maps differ from the unrecorded documents submitted to the District for approval, additional conveyance facility and treatment plant connection charges may be due from the Village of Windsor.

7. That the Village of Windsor shall require the presence of an engineer or an inspector on the construction of said sewer extensions who shall make a record showing in detail the construction as built and shall furnish the District with as-built plans in the case of any significant deviations from the original design.

8. That the construction, operation, maintenance and use of said sewer extensions shall be in accordance with the lawful rules and regulations of the District and with the applicable State of Wisconsin plumbing and sewerage codes.

9. That if construction of the sewer extensions covered by said plans has not commenced within four years following the approval date of this resolution, this approval shall become void and new plans shall be submitted. If construction has commenced but has not been completed within the four-year approval period, the unbuilt portion must be submitted for reapproval if it is a significant portion of the project and would require DNR approval.
The above resolution was adopted by the Commissioners of the Madison Metropolitan Sewerage District at their meeting held at the District on March 12, 2020.

MADISON METROPOLITAN SEWERAGE DISTRICT

Attested by:

________________________________
Thomas Hovel, President

________________________________
Mary Swanson, Secretary
COMMISSION AGENDA REPORT
Meeting of March 12, 2020

Increase Approved Transaction Amount:
Grass Lake Dike Restoration Design Professional Services (Cardno)

Lead Staff: Jeff Klawes, Project Engineer

Requested Action: The Commission is requested to approve resolution 2020-03-12-R3, increasing the approved transaction amount for Grass Lake Dike Restoration Design Services from $80,245 to $164,175.

Attachments
Attachment 1: Resolution 2020-03-12-R3

Financial Impact:
The Grass Lake Dike Restoration Design Services were approved at the 8/30/2018 Commission meeting at a cost of $72,950. Since that time, two amendments have been issued to the agreement, bringing the approved total to $79,650. Per the Transaction Approval Authority policy, any amendments above 10 percent ($80,245) to the original amount require Commission approval. The design amendment currently under consideration ($69,600) would increase the approved amount to $149,250 and the 10 percent transaction limit to $164,175. The total project cost ($542,000) for this capital budget item will be adjusted as needed when all final design and construction considerations are known.

Background:
The Badfish Creek diversion channel conveys most of the treatment plant effluent flow to the Rock River. The channel was constructed in 1957 as part of the Effluent Diversion project. The dike that separates the channel from Grass Lake was previously permitted by the WDNR, and as part of the permit, the District is required to maintain the dike to prevent effluent discharge to Grass Lake. The banks of the dike have eroded over time and need repair. Proposed repairs include stabilizing the dike by adding fill and rip-rap to the banks of the dike.

Work on assessment, planning and design for the Grass Lake Dike Restoration project began in the fall of 2018. A planning report, including assessment and evaluation of existing dike conditions, concepts for bank restoration, proposed implementation schedule and preliminary cost estimate has been prepared and presented to the District. Construction plans, technical specifications and a construction cost estimate have also been provided.
During the permitting process, it was determined that Dane County would require a floodplain development permit. The project area is within a Zone A unstudied floodplain as well as within a flood storage district. The Dane County Ordinance for flood storage districts requires compensatory floodwater storage to be provided for any fill being placed that would raise the base flood elevation, even if the fill is placed on an existing permitted structure for maintenance purposes. Our project would require placing fill to repair the dike, therefore reducing storage for floodwater. The cost estimated for this potential compensatory storage is in the range of $500,000. Inclusion of compensatory storage would likely delay the project by at least one year.

**Analysis and Options:**
Additional study/analysis is needed to address the compensatory floodwater storage requirement. This work was not anticipated in the original scope of work for these design services. Staff recommends completing a watershed hydrology and hydraulic analysis (model) to determine the base flood elevation in order to more accurately calculate the amount of fill being placed within the floodplain and to determine the compensatory volume. This study may also demonstrate that the effluent channel and dike should not be included within a flood storage district and should be considered exempt from compensatory storage requirements.

To complete these tasks, an amendment to the professional services agreement is required, as the cost for this would increase the transaction limit above the 10 percent policy amount. The scope of services for the proposed amendment would include:

1. Investigate Dane County Floodplain Development Permit requirements and provide recommendations. This task would include meetings and correspondence with the DNR, Dane County and the District, search and review of record documents and regulations, and preparation of reports and recommendations.
2. Hydraulic Modeling
   a. Determine the base flood elevation for the flood storage district.
   b. Determine (quantify) the effect that proposed dike restoration fill will have on the base flood elevation.
   c. Determine (quantify) the effect that the existing flood storage district has on downstream floodplain conditions.
   d. Determine (quantify) the effect that proposed dike restoration fill will have on downstream floodplain conditions.
3. Compensatory Flood Storage
   a. Determination of storage volume, site search and recommendations, storage area, design costs and preparation of construction cost estimate.

**Recommendation:**
The Commission is requested to approve resolution 2020-03-12-R3 increasing the approved transaction amount to Cardno, Inc., for the Grass Lake Dike Restoration Design Services from $80,245 to $164,175 to complete the task noted above.
Key considerations:

- The additional services will enable the District to assess the impacts from the flood development permit requirements on the Grass Lake Dike Restoration project scope, budget and schedule.
- A thorough analysis will better facilitate an equitable resolution for affected stakeholders.
- The hydraulic analysis may conclude that compensatory storage is not required, thus avoiding the estimated $500,000 cost for this.
- Cardno has demonstrated understanding of the issues and is qualified to perform the services as described.
- The level of effort is appropriate and the pricing reasonable.

Option 1:
Do not proceed with watershed hydrologic and hydraulic analysis, instead provide compensatory flood storage based on total volume of project fill.

Key considerations:

- This would meet permit requirements without the expense of a study.
- This would likely add more compensatory storage than is necessary.
- To obtain the land and easements needed for the storage, this will delay the project by at least one year.
- This would avoid the cost of a hydraulic analysis but would incur the cost of full compensatory storage, which is estimated to be $500,000.

Option 2:
Request staff to consider additional design firms and have staff return at a later date with an award recommendation.

Key considerations:

- This would allow comparison to alternate floodplain design service proposals.
- This would result in additional staff time to prepare and select a design firm.
- The level-of-interest of other firms in this work is unknown.
- This would delay the project.
- It is unclear what the impact would be to the overall project budget.

Next Steps:
If the increase in services is approved, work on the hydraulic study/analysis will begin, with completion anticipated in the summer of 2020. Any total project cost impacts will be determined after this.
WHEREAS, the Badfish Creek diversion channel was constructed in 1957 as part of the Effluent Diversion project and includes a dike that separates the channel from Grass Lake, and

WHEREAS, the dike that separates the channel from Grass Lake was previously permitted by the WDNR, and as part of the permit, the District is required to maintain the dike to prevent effluent discharge to Grass Lake, and

WHEREAS, the banks of the dike have eroded over time and need repair, and

WHEREAS, proposed repairs include stabilizing the dike by adding fill and rip-rap to the banks of the dike, and

WHEREAS, the professional services associated with planning and designing of the dike improvements were approved at the August 30, 2018, Commission meeting, at an amount of $72,950 and a not-to-exceed limit of 10 percent greater than this amount $80,245, and

WHEREAS, the District has entered-into a professional services agreement (the “agreement”) with Cardno, Inc., to complete design of the dike improvements, and

WHEREAS, work on the planning and design for the Grass Lake Dike Restoration project began in the fall of 2018, and

WHEREAS, during the permitting process, it was determined that a floodplain development permit and potential storage to compensate for the additional fill and rip-rap added during the project would be required, and

WHEREAS, additional study/analysis is needed to address the compensatory floodwater storage requirements, and

WHEREAS, this work was not anticipated in the original scope of work for these design services, and

WHEREAS, an increase in design services scope is needed and the scope increase requires commission approval per the Transaction Approval Authority policy.

NOW, THEREFORE, and following consideration of the above recitals which are incorporated by reference, it is hereby resolved by the Madison Metropolitan Sewerage District Commission, as follows:
1. The Commission authorizes increase of the Grass Lake Dike Restoration professional design services with Cardno, Inc., from $79,650 to $149,250, and increase of the not-to-exceed transactional authority limit for these services from $80,245 to $164,175.

2. The Commission authorizes the Chief Engineer and Director to amend the professional services agreement for this work on behalf of the District.

The above and foregoing resolution #2020-03-12-R3 was duly adopted at a meeting of the Madison Metropolitan Sewerage District Commission on March 12, 2020.

MADISON METROPOLITAN SEWERAGE DISTRICT COMMISSION

Attested by:

______________________________________________
Thomas D. Hovel, President

______________________________________________
Mary Swanson, Secretary

Incorporated by Reference:
Professional Services Agreement with Cardno, Inc.
Proposal for additional scope from Cardno, Inc.
COMMISSION AGENDA REPORT
Meeting of March 12, 2020

Expedited Boundary Annexation
2020-01 Monona Grove School District (Village of Cottage Grove)

Lead Staff: Curt Sauser, Engineering Technician

Requested Action: The Commission is requested to approve resolution 2020-03-12-R4 authorizing the Commission President and District Chief Engineer and Director to execute an order to annex the specified parcel to the District.

Attachments:
Attachment 1: Resolution 2020-03-12-R4
Attachment 2: District Map
Attachment 3: Legal Description & Map
Web Link: Order of Annexation & Exhibits (https://www.madsewer.org/About-Us/Commission)

Financial Impact:
The 2020 expedited annexation fee is $1,425 per annexation. Appropriate conveyance facility and treatment plant connection charges will be due for the lands to be served, prior to connection to the public sanitary sewer system.

Background:
The District received a request for annexation by the Village of Cottage Grove on February 24, 2020. The proposed annexation consists of approximately 42 acres of land which is generally located on Buss Road, about 0.25 miles north of the intersection with County Highway BB on the west side of the Village. The Board of Trustees of the Village of Cottage Grove adopted Ordinance #05-2019 on May 20, 2019 to annex the subject lands to the Village of Cottage Grove from the Township of Cottage Grove.

The lands described in the District annexation request are part of the Cottage Grove Urban Service Area. The Monona Grove School District parcel was recommended for addition to the service area by Dane County Regional Planning Commission Resolution #1028 on July 29, 2004. The Wisconsin Department of Natural Resources subsequently approved the amendment to the Dane County Water Quality Management Plan in their letter dated September 29, 2004.
**Analysis and Options:**
The requested annexation is consistent with the District’s criteria for annexations, as follows:

<table>
<thead>
<tr>
<th>Annexation Name: Monona Grove School District</th>
<th>YES</th>
<th>GENERALLY</th>
<th>NO</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annexation #: 2020-01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contiguous to District Boundaries</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Prevents gaps (islands) in District Boundaries</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Includes nearby lands within USA</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular boundaries (follows section lines)</td>
<td>X</td>
<td></td>
<td></td>
<td>Follows municipal boundary line</td>
</tr>
<tr>
<td>Adjacent parklands included (if possible)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Recommendation:**
Approve the expedited annexation request and add the parcel to the District’s service area.

Key considerations:
- The proposed annexation is consistent with the five criteria identified by Guidelines for Orderly and Efficient Addition of Territory to the District, which was adopted by the Commission on May 11, 2001.
- Addition of the parcel to the District’s service area will promote efficiency and economy in sewerage management.

**Option 1:**
Provide written objection to the expedited annexation request and schedule a public hearing for consideration of the request(s).

Key considerations:
- If the Commission chooses to disapprove a request for expedited annexation, the Commission must issue written determination disapproving the addition of territory within 30 days of receipt of the request (March 25, 2020).
- If disapproved by the Commission, the territory proposed may be annexed only through the public hearing process specified in Wis. Stats. §200.15(2).

**Option 2:**
Other options brought forward by the Commission.

**Next Steps:**
If approved by the Commission, the Monona Grove School District annexation parcel will be eligible to receive public sanitary sewer service. A sewer extension request must be submitted and appropriate connection charges paid prior to the lands being connected to the public sewerage system.
EXPEDITED BOUNDARY ANNEXATION
2020-01 MONONA GROVE SCHOOL DISTRICT
RESOLUTION 2020-03-12-R4

WHEREAS, an annexation request referred to as the Monona Grove School District was submitted to the Madison Metropolitan Sewerage District (the “District”), by Kevin Lord, engineer with the Village of Cottage Grove, on February 24, 2020, and

WHEREAS, the Village of Cottage Grove is requesting that approximately 42.04 acres of land generally located 0.25 miles north of the intersection of County Highway BB and Buss Road be added to the boundaries of the Madison Metropolitan Sewerage District. The subject land is a contiguous “40” acre parcel, as well as adjacent right-of-way of Buss Road. The requested annexation will allow service to a proposed school facility, and

WHEREAS, the Village of Cottage Grove adopted Ordinance 05-2019 on May 20, 2019 which annexed the subject lands from the Town of Cottage Grove, and

WHEREAS, the subject annexation request is consistent with section §200.15(1)(a)(3) of the Wisconsin statutes, and

WHEREAS, the proposed annexation parcel is adjacent to territory presently served by the District, and

WHEREAS, the District has sufficient design capacity to serve the lands proposed for annexation, and

WHEREAS, the subject property was added to the Cottage Grove Urban Service Area by Dane County Regional Planning Commission (DCRPC) Resolution #1028, adopted July 29, 2004. The Wisconsin Department of Natural Resources approved the amendment to the Dane County Water Quality Management Plan in their letter dated September 29, 2004, and

WHEREAS, the subject annexation will promote sewerage management policies and operations; will promote public health and welfare; will effect efficiency and economy in sewerage management based upon currently accepted engineering standards regarding prevention and abatement of environmental pollution, and federal and state rules and policies in furtherance thereof; and will be consistent with adopted plans of municipal, regional and state agencies, and

WHEREAS, the Chief Engineer and Director of the District has recommended the approval of said annexation request,
NOW, THEREFORE, and following consideration of the above recitals which are incorporated by reference, it is hereby resolved by the Madison Metropolitan Sewerage District Commission as follows:

1. The request for annexation of the Monona Grove School District parcel, made by Kevin Lord, engineer for the Village of Cottage Grove, submitted on February 24, 2020, is approved.

2. The Commission President and District Chief Engineer and Director shall execute the order for District Annexation #2020-01.

3. The Village of Cottage Grove shall pay the expedited annexation fee of $1,425 to the District within 30 days of receiving an invoice for the fee.

The above resolution was adopted by the Commissioners of the Madison Metropolitan Sewerage District at their meeting held at the District on March 12, 2020.

MADISON METROPOLITAN SEWERAGE DISTRICT

Attested by:

________________________________  ________________________________________
Thomas Hovel, President                                Mary Swanson, Secretary
Monona Grove
School District Annexation
Village of Cottage Grove
MMSD Annexation No. 2020-01

Monona Grove School District Annexation
42.038 Acres

Attachment 2

Published Date: 2/25/2020
Created By: curts
February 24, 2020

Curt Sauser, PLS
Madison Metropolitan Sewerage District
1610 Moorland Road
Madison, Wisconsin 53713

Re: Monona Grove School District Sewerage Annexation

Dear Mr. Sauser:

The Village of Cottage Grove requests Madison Metropolitan Sewerage District to annex 42.038 acres of land into the service area for future sewer service for the school district. The land is on the west side of the Village of Cottage Grove lying East of Buss Road and northerly from Cottage Grove Road approximately 1,320 feet. The lands are owned by the Monona Grove School District.

The Village of Cottage Grove has approved the annexation request of the 42.038 acres for the Monona Grove School District into the Village Corporate Limits. All the land included in this request has been approved by the WDNR for inclusion to the Village of Cottage Grove Urban Service Area. Our review of the land included verification of the capacity of the Village and MMSD sanitary systems for the inclusions of this land based on the planned school district use.

The Village has an existing 8-inch sanitary sewer extended to the existing West end of Pheasant Run at which the school district is planning to connect for the new school facility.

If you have any questions feel free to contact me.

Sincerely,

Kevin Lord, PE, PLS
Village Engineer

Cc: Erin Ruth, Director of Planning & Development
    Matt Giese, Village Administrator
    JJ Larson, Director of Public Works
    Larry Konopacki, Village Attorney

221 E. Cottage Grove Road, Cottage Grove, WI 53527
Phone: (608) 839-4704 Fax: (608) 839-4698 Website: www.vi.cottagegrove.wi.gov
Ordinance 05-2019 Annexing Territory from the Township of Cottage Grove to the Village of Cottage Grove, Dane County, Wisconsin known as the Monona Grove School District Annexation.

Attached is a true and correct copy of Ordinance 05-2019 Annexing Territory from the Township of Cottage Grove to the Village of Cottage Grove, Dane County, Wisconsin known as the Monona Grove School District Annexation.

Debra S. Winter Treasurer

STATE OF WISCONSIN
COUNTY OF DANE

Personally came before me this 25th day of July, 2019, the above named Debra S. Winter, known to me, who duly acknowledged the same on behalf of the Village of Cottage Grove as its Treasurer.

Lisa Kalata
Notary Public, State of Wisconsin

My Commission expires: 10/30/2020

Return Address:
Village of Cottage Grove
Attn: Deb Winter
221 E. Cottage Grove Rd.
Cottage Grove, WI 53527

Parcel Numbers:
0711-053-9000-2
May 22, 2019

STATE OF WISCONSIN
Village of Cottage Grove
Dane County, Wisconsin

I, Lisa Kalata, Village Clerk do hereby certify that the attached is a true and correct copy of Ordinance 05-2019 Annexing Territory from the Township of Cottage Grove to the Village of Cottage Grove, Dane County, Wisconsin known as the Monona Grove School District Annexation.

Be it further known that Ordinance 05-2019 approving this annexation was adopted by the Village Board of Trustees at their regular Village Board meeting held on May 20, 2019.

Dated this 22nd day of May, 2019.

VILLAGE OF COTTAGE GROVE

Lisa Kalata, Village Clerk
ORDINANCE NO. 05-2019
ANNEXING TERRITORY FROM THE TOWNSHIP OF COTTAGE GROVE
TO THE VILLAGE OF COTTAGE GROVE, DANE COUNTY, WISCONSIN
(MONONA GROVE SCHOOL DISTRICT ANNEXATION)

The Village of Cottage Grove, Wisconsin Board of Trustees does ordain as follows:

Section 1. Territory Annexed. In accordance with Section 66.0217 of the Wisconsin Statutes and the petition for unanimous direct annexation filed with the Village Clerk, signed by the owners of the property in the territory and stating that ZERO electors reside in the territory that is within Dane County Supervisor District 36, Assembly District 46, and Senate District 16, the following described territory in the Town of Cottage Grove, Dane County, Wisconsin, is annexed to the Village of Cottage Grove, Wisconsin. See Exhibit A for the annexation map and for the legal description.

Section 2. Determination of Public Interest. In a letter dated March 18, 2019, the Wisconsin Department of Administration's Office of Municipal Boundary Review declared the proposed annexation "to be in the public interest." See Exhibit B for the letter.

Section 3. Effect of Annexation. From and after the date of this ordinance, the territory described in Exhibit A shall be part of the Village of Cottage Grove for any and all purposes provided by law and all persons coming or residing within such territory shall be subject to all ordinances, rules, and regulations governing the Village of Cottage Grove.

Section 4. Severability. If any provision of this ordinance is invalid or unconstitutional, or if the application of this ordinance to any person or circumstance is invalid or unconstitutional, such invalidity or unconstitutionality shall not affect the other provisions or application of this ordinance which can be given effect without the invalid or unconstitutional provision or application.

Section 5. Effective Date. This ordinance shall take effect upon passage as provided by law.

Dated this 20th day of May, 2019

VILLAGE OF COTTAGE GROVE

John Williams, Village President

Attest:

Lisa Kalata, Village Clerk
March 18, 2019

LISA A KALATA, CLERK
VILLAGE OF COTTAGE GROVE
221 E COTTAGE GROVE RD
COTTAGE GROVE, WI 53527-9619

KIM BANIGAN, CLERK
TOWN OF COTTAGE GROVE
4058 COUNTY RD N
COTTAGE GROVE, WI 53527-9503

Subject: MONONA GROVE SCHOOL DISTRICT ANNEXATION

The proposed annexation submitted to our office on February 26, 2019, has been reviewed and found to be in the public interest. In determining whether an annexation is in the public interest, s. 66.0217 (6), Wis. Stats. requires the Department to examine "[t]he shape of the proposed annexation and the homogeneity of the territory with the annexing village or city..." so as, to ensure the resulting boundaries are rational and compact. The statute also requires the Department to consider whether the annexing city or village can provide needed municipal services to the territory. The subject petition is for territory that is reasonably shaped and contiguous to the VILLAGE OF COTTAGE GROVE, which is able to provide needed municipal services.

The Department reminds clerks of annexing municipalities of the requirements of s. 66.0217 (9)(a), Wis. Stats., which states:

"The clerk of a city or village which has annexed shall file immediately with the secretary of administration a certified copy of the ordinance, certificate and plat, and shall send one copy to each company that provides any utility service in the area that is annexed. The clerk shall record the ordinance with the register of deeds and file a signed copy of the ordinance with the clerk of any affected school district..."

State and federal aids based on population and equalized value may be significantly affected through failure to file with the Department of Administration. Please file a copy of your annexing ordinance, including a statement certifying the population of the annexed territory. Please include your MBR number 14196 with your ordinance. Ordinance filing checklist available at http://mds.wi.gov, click on "Help on How to Submit Municipal Records". Email scanned copy of required materials (color scan maps with color) to mds@wi.gov or mail to: Wisconsin Department of Administration, Municipal Boundary Review, PO Box 1645, Madison WI 53701-1645.

The petition file is available for viewing at: http://mds.wi.gov/ViewPetition?id=2270
Please call me at (608) 264-6102, should you have any questions concerning this annexation review.

Sincerely,

Erich Schmidtke, Municipal Boundary Review

cc: petitioner
Wisconsin Annexation/Attachment/Detachment Ordinance Filing Checklist

☐ Complete Legal Description
☐ The ordinance must include a legal description of the land to be transferred. The land must be described by reference to the government lot, private claim, quarter-section, section, town and range in which the land lies. The land must be further described by metes and bounds commencing from a monumented corner of the section or quarter-section, or the monumented end of a private claim or federal reservation, in which the land lies; OR
☐ If the land is wholly and entirely within a lot or lots, or all of a block or blocks of a recorded subdivision plat or certified survey map, it must be described by reference to the lot (s) and/or block (s) therein, along with the name of the plat or the number, volume, page, and County of the certified survey map.
☐ The land may NOT be described only by:
- Aliquot part;
- Reference to any other document (plat of survey, deed, etc.);
- Exception or Inclusion;
- Parcel ID or tax number.

Wisconsin Elections Commission Requirements
☐ Will the annexation territory join an existing ward or necessitate creation of a new ward? For more information, please contact the Wisconsin Elections Commission at (608) 266-8005 or elections@wi.gov or see their annexation checklist here: WEC Annexation Checklist http://elections.wi.gov/forms/el-100.

Email legible scanned copy of required materials to mds@wi.gov
Scan in color any page or map containing color. Scan large maps at full size.

OR mail one copy of required materials to:
Wisconsin Department of Administration
Municipal Boundary Review
PO Box 1645, Madison WI 53701-1645

608-264-6102  mds@wi.gov  http://mds.wi.gov
ANNEXATION EXHIBIT

BEING ALL OF THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 5 AND A PART OF THE SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 6, ALL IN TOWNSHIP 7 NORTH, RANGE 11 EAST, TOWN OF COTTAGE GROVE, DANE COUNTY, WISCONSIN.

LEGEND
- 3/4" O.D. IRON BAR FOUND
- MAG NAIL FOUND
- ALUMINUM MONUMENT FOUND
- RECORDED AS VILLAGE LIMITS

SCALE 1" = 300'

TOTAL AREA:
1,831,184 Sq. Feet
42.038 Acres

SURVEYOR'S NOTE
THIS SURVEY IS STRICTLY INTENDED FOR THE PURPOSE OF DESCRIBING AN ANNEXATION BOUNDARY AND IS NOT INTENDED TO COMBINE OR DIVIDE ANY EXISTING PARCELS AND MAY NOT BE USED FOR SUCH PURPOSES.

THIS INSTRUMENT WAS DRAFTED BY JORDAN BROST
AND DRAWN BY JORDAN BROST

Civil Engineering
Land Surveying
Landscape Architecture
Jordan G. Brost, PLS #3009
4941 Kitchener Court
Stevens Point, WI 54481
715.344.9990 ext. 715.344.9922(FX)

MONONA GROVE SCHOOL DISTRICT
C/O JERRUD ROSSING
5201 MONONA DRIVE
MONONA, WI 53716

JOB # 19.705
SHEET 1 OF 2 SHEETS

56
ANNEXATION EXHIBIT

BEING ALL OF THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 OF SECTION 5 AND A PART OF THE SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 6, ALL IN TOWNSHIP 7 NORTH, RANGE 11 EAST, TOWN OF COTTAGE GROVE, DANE COUNTY, WISCONSIN.

Surveyor's Certificate:

Being all of the Southwest 1/4 of the Southwest 1/4 of Section 5 and part of the Southeast 1/4 of the Southeast 1/4 of Section 6, all in Township 7 North, Range 11 East, Town of Cottage Grove, Dane County, Wisconsin, described as follows:

Commencing at the Southwest corner of Section 5, Township 7 North, Range 11 East, said point also being the Southeast corner of Section 6, Township 7 North, Range 11 East and being the Point of Beginning (POB) of the parcel to be described;

Thence S 85°54'28"W along the South line of the Southeast 1/4 of said Section 6, 33.07 feet to the intersection of said South line and the West right-of-way line of Buss Road;

Thence N 00°23'40" W along the West right-of-way line of Buss Road, 1335.68 feet to the intersection of said West right-of-way line and the North line of the Southeast 1/4 of the Southeast 1/4 of said Section 6;

Thence N 85°42'12"E along the North line of the Southeast 1/4 of the Southeast 1/4 of said Section 6, 33.08 feet to the Northwest corner of the Southwest 1/4 of the Southwest 1/4 of said Section 5;

Thence N 87°34'30" E along the North line of the Southwest 1/4 of the Southwest 1/4 of said Section 5, 1338.09 feet to the Northeast corner thereof;

Thence S 00°23'18" E along the East line of the Southwest 1/4 of the Southwest 1/4 of said Section 5, 1337.16 feet to the Southeast corner thereof;

Thence S 87°37'58" W along the South line of the Southwest 1/4 of said Section 5, 1337.90 feet to the Point of Beginning.

Containing 1,831.184 Square Feet - 42.038 Acres

I hereby certify that the property shown and described hereon was surveyed and mapped under my direction according to Chapter A-I-E of Wisconsin Administrative Code, minimum standards for property surveys. That such survey is correct representation of the exterior boundaries of the lands surveyed to the best of my knowledge and belief.

Jordan G. Brost, PLS # 3009

7-10-2019

JOB # 19705

THIS INSTRUMENT WAS DRAF TED BY JORDAN BROST AND DRAWN BY JORDAN BROST

SHEET 2 OF 2 SHEETS

57
COMMISSION AGENDA REPORT  
Meeting of March 12, 2020  
Award of Contract: Sodium Hypochlorite

Lead Staff: Eric Dundee, Director of Wastewater Operations and Reliability

Requested Action: The Commission is requested to adopt resolution 2020-03-12-R5 awarding Hawkins, Inc. a contract to furnish and deliver sodium hypochlorite through December 31, 2020 at a maximum cost of $18,600 with an option for three (3) additional years at a maximum cost of $77,800. The total approved transaction amount over the four years would be $96,400.

Attachments:
Attachment 1: Bid Tabulations
Attachment 2: Resolution 2020-03-12-R5

Financial Impact:
The charges associated with furnishing and delivering sodium hypochlorite are anticipated to cost up to $18,600 in 2020 with additional costs in 2021, 2022 and 2023. The total maximum contract cost is $96,400.

Background:
Sodium hypochlorite (12.5 percent bleach) is used at the District as a disinfectant for recycled effluent known as “W4” water. W4 water is used within the plant as a recovered resource for toilets in the maintenance facility, seal water for pumps, heat exchangers and blower cool down water, within our struvite harvesting (Ostara) process, and polymer mixing. Sodium hypochlorite allows the district to reduce its use of potable water.

Bids were received from three companies on February 17, 2020. Hawkins, Inc. provided the low bid for furnishing and delivering bulk sodium hypochlorite. Hawkins, Inc. was also found to have provided all necessary contract documents.

Analysis and Options
The District’s use of effluent water with a sodium hypochlorite (bleach) treatment saves the District approximately $1,000,000 per year versus buying potable water for plant use. This savings is based off 2019’s estimated reused effluent total of 209.4 million gallons and the City of Madison’s current water consumption rate of $0.00467/gallon.
**Recommendation:**
Adopt resolution 2020-03-12-R5 awarding Hawkins, Inc. the contract to furnish and deliver sodium hypochlorite as the low, responsive bidder at a 2020 cost of $1.69 per gallon and approving a maximum 2020 expenditure of $18,600. The contract would be renewable for up to 3 additional years for an additional cost up to $77,800.

Key considerations:
- Hawkins, Inc. has provided all necessary documentation, was the low bid, and is qualified to furnish and deliver the chemical.
- A one-year contract with the ability to continue the contract for an additional three years will allow the District to maintain supply of the chemical while providing flexibility to procure the chemical at the lowest cost in future years.

**Option 1:**
Reject all proposals and maintain current purchasing agreement with existing vendor.

Key consideration:
- Without a contract, the District has more flexibility to purchase sodium hypochlorite from other vendors. This, however, would lead to higher costs compared to the recommended option.

**Option 2:**
Discontinue use of sodium hypochlorite.

Key consideration:
- The District could discontinue reuse of effluent water thus not requiring sodium hypochlorite. This, however, would be in conflict with District outcomes policies for financial accountability and resource conservation.

**Next Steps:**
Upon approval of the Commission, a contract will be executed with Hawkins, Inc.
Bid Opening
February 17, 2020 11:00 am
2020 Bulk Sodium Hypochlorite

Present: Matt Leitzen, Procurement Manager; Michelle Stransky, Purchasing and Inventory Assistant

Witness: Debra Iglesias, Resource Team Assistant

<table>
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<tr>
<th>Bidding Company</th>
<th>Comments</th>
<th>Lump Sum ($)</th>
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<tbody>
<tr>
<td>Hawkins</td>
<td>$1.69 per gallon</td>
<td>$16,900.00</td>
</tr>
<tr>
<td>Hydrite</td>
<td>$2.28 per gallon</td>
<td>$22,800.00</td>
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<tr>
<td>Alexander Chemical Corp.</td>
<td>$2.1884</td>
<td>$21,884.00</td>
</tr>
</tbody>
</table>

Witness Signature: [Signature]

NOTATION:
AWARD OF CONTRACT: SODIUM HYPOCHLORITE
RESOLUTION 2020-03-12-R5

WHEREAS, The Madison Metropolitan Sewerage District (the “District”) uses sodium hypochlorite in its treatment process, and

WHEREAS, the District advertised a request for proposals to furnish and deliver sodium hypochlorite on January 31, 2020 and February 7, 2020, and

WHEREAS, the District publicly opened and read aloud bids for an estimated annual cost for sodium hypochlorite on February 17, 2020, and

WHEREAS, Hawkins, Inc. was the low bidder at $1.69 per gallon for an estimated total of $16,900 for sodium hypochlorite deliveries in 2020, and

WHEREAS, the annual contract can be extended for up to three additional years if mutually agreed upon by both parties, and

WHEREAS, the estimated overall contract cost for the maximum length of contract exceeds $50,000, and

THEREFORE, BE IT RESOLVED, that a contract be awarded to Hawkins, Inc. to furnish and deliver sodium hypochlorite subject to the following conditions:

1. Contracts will start on March 16, 2020 and run through December 31, 2020, with an option to extend the contract up to three (3) periods of twelve (12) months each with mutual consent of both parties.
2. Price changes may be proposed by either party no later than ninety (90) days prior to contract extension. The contract will not be extended if price change is not accepted by both parties. Supplier price changes must be supported with documentation. Increase in price must be approved by the Chief Engineer and Director. If the District deems cost increase as not acceptable, it reserves the right to re-bid the contract in whole or part.
The above resolution was adopted by the Commissioners of the Madison Metropolitan Sewerage District at their meeting held at the District on March 12, 2020.

**MADISON METROPOLITAN SEWERAGE DISTRICT**

*Attested by:*

Thomas Hovel, President

Mary Swanson, Secretary
COMMISSION AGENDA REPORT
Meeting of March 12, 2020

Increase Approved Transaction Amount:
I/I Reduction Program Plan Professional Services (Brown & Caldwell)

Lead Staff: Jen Hurlebaus, Collection System Engineer

Requested Action: The Commission is requested to approve resolution 2020-03-12-R6 increasing the infiltration and inflow reduction program plan professional services contract with Brown and Caldwell from $99,100 to $130,780 and increasing the not-to-exceed 10 percent transaction limit for these services from $109,010 to $143,850.

Attachments:
Attachment 1: Resolution 2020-03-12-R6

Financial Impact:
An allowance of $100,000 for professional services to focus on infiltration and inflow was included as part of the Collection System Facilities Plan Update project in the 2020 Capital Improvements Plan and the capital projects budget (2020). The scope of work has increased to include technical support for work associated with the infiltration and inflow reduction program advisory committee in 2020, which will increase Brown and Caldwell’s budget to $130,780. The increase in cost will be covered by funds that were included in the operating budget (2020) for the infiltration and inflow reduction program.

Background:
The purpose of the infiltration and inflow (I/I) reduction program plan is to evaluate options and recommend next steps for developing an infiltration and inflow program for the District. The original scope of work anticipated forming an advisory committee in mid-2020, after the plan was completed. The plan was to serve as a resource for the advisory committee to start making decisions on the overall approach for the District’s infiltration and inflow reduction program.

As part of planning for the 2019 customer community meeting #3, the District decided to form an advisory committee starting in January 2020 to assist in the process of developing the infiltration and inflow reduction program plan. The goal of the advisory committee is to provide recommendations and help develop a program framework that works for all customer communities within the District.
The first advisory committee meeting was held January 22, 2020. Brown and Caldwell presented six regional programs as case studies. Brown and Caldwell had included this presentation to stakeholders as part of their scope of work for the infiltration and inflow reduction program plan. Five more advisory committee meetings are planned for 2020 and are a change in scope. Additionally, the scope has increased to include documentation of the committee’s work and the committee’s recommendations in the program plan.

Brown and Caldwell provided a cost proposal for $30,870 to provide technical support for work associated with the advisory committee. Services include preparation of meeting materials, attending the meetings, additional project management and documentation of the committee’s recommendations in the program plan.

**Analysis and Options:**

**Recommendation:**
The Commission is requested to approve resolution 2020-03-12-R6 increasing the infiltration and inflow reduction program plan professional services contract with Brown and Caldwell from $99,100 to $130,780 and increasing the not-to exceed 10 percent transactional authority limit for these services from $109,010 to $143,850.

Key considerations:
- The scope increase will improve the infiltration and inflow reduction program plan by including the recommendations of the advisory committee.
- Brown and Caldwell’s level of effort is appropriate, and their increased pricing seems reasonable compared to the additional scope of work.
- The District has been pleased with Brown and Caldwell’s work.
- Brown and Caldwell’s experience and expertise will assist the District’s work with the advisory committee.

**Option 1:**
The Commission could request staff work within the existing scope.

Key considerations:
- The advisory committee has been formed and meetings are scheduled.
- The infiltration and inflow reduction plan would proceed without the input of the advisory committee.
- The work and recommendations of the advisory committee would not be incorporated into the infiltration and inflow reduction plan.

**Next Steps:**
District staff recommends authorizing the increase of the transactional authority limit for Brown and Caldwell’s professional services agreement due to the increased scope of work. Brown and Caldwell will begin these services upon approval.
INCREASE APPROVED TRANSACTION AMOUNT:
I/I REDUCTION PROGRAM PLAN PROFESSIONAL SERVICES (BROWN & CALDWELL)
RESOLUTION 2020-03-12-R6

WHEREAS, the Madison Metropolitan Sewerage District (the “District”) is developing an infiltration and inflow reduction program plan (the “plan”) and,

WHEREAS, the professional services associated with developing the plan were approved at the September 12, 2019, Commission meeting, at an amount of $99,910 and a not-to-exceed limit of 10 percent greater than this amount, and

WHEREAS, the District has entered-into a professional services agreement (the “agreement”) with Brown and Caldwell to complete the Plan, and

WHEREAS, the District decided to form an advisory committee starting in January 2020 to assist in the process of developing the plan, and

WHEREAS, the formation of the committee is occurring before the completion of plan, as was originally planned, and

WHEREAS, the scope of the project and associated design work has increased in order to provide support for the advisory committee meetings and incorporate the recommendations into the plan, and

WHEREAS, the recommended scope increase requires commission approval per the Transaction Approval Authority policy, and

WHEREAS, the increase in project scope is anticipated to increase the total project cost by approximately $31,000.

NOW, THEREFORE, and following consideration of the above recitals which are incorporated by reference, it is hereby resolved by the Madison Metropolitan Sewerage District Commission, as follows:

1. The Commission concurs with increase in scope of the professional services and the associated increase in the total project cost of approximately $31,000.

2. The Commission authorizes an increase of the infiltration and inflow reduction program plan professional services agreement with Brown and Caldwell from $99,910 to $130,780, an increase of the not-to-exceed transactional authority limit for these services from $109,010 to $143,850.
3. The Commission authorizes the Chief Engineer and Director to amend the professional services agreement for this work on behalf of the District.

The above and foregoing resolution 2020-03-12-R6 was duly adopted at a meeting of the Madison Metropolitan Sewerage District Commission on March 12, 2020.

MADISON METROPOLITAN SEWERAGE DISTRICT COMMISSION

Attested by:

__________________________________________  ________________________________________
Thomas D. Hovel, President                Mary Swanson, Secretary

Incorporated by Reference:
• Professional Services Agreement with Brown and Caldwell
• Proposal for additional scope from Brown and Caldwell
COMMISSION AGENDA REPORT
Meeting of March 12, 2020
Introduction of Annexation Request 2020-02 and Scheduling of
Public Hearing for a Parcel in the Town of Middleton

Lead Staff: Curt Sauser, Engineering Technician

Requested Action: Review the proposed annexation and schedule a public hearing on April 16, 2020, or a later date, for consideration of adding the lands to the District’s service area.

Attachments:
Attachment 1: Town of Middleton Annexation Request
Attachment 2: District Annexation Map

Financial Impact:
The 2020 petitioned annexation fee is $3,375 per annexation parcel. Upon annexation to the District, conveyance facility and treatment plant connection charges will be due at a later date, prior to connection to the public sanitary sewer system.

Background:
The District received a request from the Town of Middleton on February 27, 2020, for addition of approximately 127.70 acres to the District’s service area, referred to as the Pioneer Pointe Development. The Pioneer Pointe lands abut Pioneer Road on the east, which is also the boundary of the intergovernmental boundary agreement between the City of Madison, City of Middleton and Town of Middleton. The boundary agreement expires in 2042.

The Town of Middleton has requested annexation to the District; however, the Town will not become a customer community. The Town of Middleton and City of Madison have agreed that the City of Madison Sewer Utility will provide service to this area. The final document has been agreed to by the parties involved but has not yet been executed. It is anticipated that the agreement will be executed in the near future, prior to the recommended public hearing on April 16, 2020.

By statute, petitions for annexations must receive a public hearing. In accordance with Wis. Stats. §200.15 (2), “the Commission shall hold a public hearing preceded by a class 2 notice under ch. 985. The commission may approve the annexation upon a determination that the standards of ss. 200.05 (4) (b) and (c) and 200.15 (3) are met.”
**Analysis and Options:**

**Recommendation:**
Schedule a public hearing at the April 16, 2020 Commission meeting for consideration of adding the lands to the District’s service area.

Key considerations:
- State statutes require the Commission to hold a public hearing for a petitioned annexation, preceded by a class 2 notice.
- April 16, 2020 is the earliest Commission meeting that complies with that requirement.
- Any approval by the District after the public hearing should be conditioned upon the Town of Middleton and City of Madison having executed an agreement for providing sanitary sewer service.

**Option 1:**
Request modifications to the annexation petition, and/or schedule a public hearing for a date after April 16, 2020.

Key considerations:
A public hearing date after April 16, 2020 should be considered if:
- Modifications to the annexation are requested to be made, prior to the public hearing.
- A quorum of the Commission is not expected at the recommended meeting.
- Commission members prefer to see the fully executed service agreement between the Town of Middleton and City of Madison prior to scheduling the public hearing.

**Next Steps:**
Staff will follow the class 2 public notice requirements and prepare a Commission agenda report for the scheduled public hearing.
February 27, 2020

Curtis A. Sauser, P.L.S.
Madison Metropolitan Sewerage District
1610 Moorland Road
Madison, WI 53713-3398

Dear Mr. Sauser:

The Town of Middleton requests that 127.3 acres of land be added to the Madison Metropolitan Sewerage District (MMSD) boundary for future sewer service. The land is located south of Mineral Point Road and west of Pioneer Road in the Town of Middleton, an area that is currently being platted as the “Pioneer Pointe” development.

The property to be annexed to MMSD was added to the Central Urban Service Area by the Capital Area Regional Planning Commission (CARPC) on August 8, 2019. The Wisconsin Department of Natural Resources approved the CUSA amendment in a letter to CARPC dated August 23, 2019. Information on the CUSA amendment is attached for your reference, including a map showing the boundaries of the property to be annexed to MMSD.

In addition, the Town of Middleton and City of Madison have each approved a Sewer Service Agreement to enable the area to be served by City sewer. This agreement is set to be executed upon City and Town approval of the Developer’s surety for the proposed Pioneer Pointe development.

If you have any questions about the annexation of these lands, please contact Rachel Holloway at Vierbicher by phone or via email. Thank you for your time and attention to this matter.

Sincerely,

Greg DiMiceli, Town Administrator

CC: Mike Rupiper, CARPC

Enclosures: Legal Description of Lands to be Annexed
WDNR Urban Service Area Approval
CARPC Urban Service Area Approval Letter
City of Madison Resolution 56252 Approving SSA
Town Board Minutes July 1, 2019 Approving SSA
PLAT LIMITS LEGAL DESCRIPTION

All of Lot 1 of Certified Survey Map No. 6405 (CSM 6405) Recorded in Volume 31 on Pages 114-116 of Certified Survey Maps of Dane County as Document No. 2263455, Lot 1 of Certified Survey Map No. 6406 (CSM 6406) Recorded in Volume 31 on Pages 117-119 of Certified Survey Maps of Dane County as Document No. 2263456, Lot 3 of Certified Survey Map No. 14062 (CSM 14062) Recorded in Volume 94 on Pages 180-182 of Certified Survey Maps of Dane County as Document No. 5180509, Lot 1 of Certified Survey Map No. 14753 (CSM 14753) Recorded in Volume 103 on Pages 39-42 of Certified Survey Maps of Dane County as Document No. 5398764, and other unplatted lands being located in the Northwest Quarter of the Northwest Quarter, the Northeast Quarter of the Northwest Quarter, the Southwest Quarter of the Northwest Quarter, the Southeast Quarter of the Northwest Quarter and the Northeast Quarter of the Southwest Quarter of Section 29, and the Northeast Quarter of the Northeast Quarter and Southeast Quarter of the Northeast Quarter of Section 30 all in Town 7 North, Range 8 East, Town of Middleton, Dane County, Wisconsin, Being more fully described as follows:

Commencing at the Northwest Corner of aforesaid Section 29;

thence South 00 degrees 12 minutes 15 seconds West, 50.00 feet to the southerly Right-of-Way line of Mineral Point Road, also known as being County Trunk Highway S Right-of-Way and the Point of Beginning;

thence along said Right-of-Way of Mineral Point Road South 89 degrees 52 minutes 17 seconds East, 332.35 feet to the East line of aforesaid CSM 6405;

thence along said East line of CSM 6405 South 00 degrees 08 minutes 09 seconds West, 990.15 feet;

thence South 89 degrees 54 minutes 21 seconds East, 988.08 feet to the West line of the Northeast Quarter of the Northwest Quarter of said Section 29;

thence along said West Quarter-Quarter line South 00 degrees 32 minutes 47 seconds West, 132.27 feet to the North line of CSM 6406;

thence along said North line of CSM 6406 North 89 degrees 39 minutes 54 seconds East, 857.51 feet to the West line of Lot 1 of Certified Survey Map No. 1279 (CSM 1279) Recorded in Volume 5 on Page 212 of Certified Survey Maps of Dane County;

thence along said West line of Lot 1 of CSM 1279 South 00 degrees 33 minutes 48 seconds West, 169.26 feet to the South line of Said CSM 1279;

thence along said South line of CSM 1279 North 89 degrees 38 minutes 17 seconds East, 64.79 feet to a line along the on the westerly boundary of aforesaid CSM 6406;

thence along said boundary of said CSM 6406 South 00 degrees 33 minutes 48 seconds West, 215.00 feet;
thence continuing along said boundary of CSM 6406 North 89 degrees 42 minutes 22 seconds East, 405.30 feet to the East line of the Northwest Quarter of aforesaid Section 29 also being the centerline of Pioneer Road;

thence along said East line of the Northwest Quarter of Section 29 South 00 degrees 33 minutes 48 seconds West, 1116.35 feet to the monumented center of said Section 29;

thence along the East line of the Southwest Quarter of said Section 29 South 00 degrees 34 minutes 26 seconds West, 330.33 feet;

thence North 89 degrees 25 minutes 34 seconds West, 40.00 feet to the westerly Right-of-Way line of Pioneer Road and northerly Right-of-Way line of Tumbledown Trail;

thence along said northerly Right-of-Way line of Tumbledown Trail South 89 degrees 47 minutes 40 seconds West, 256.09 feet to the East line of Lot 15 of Tumbledown Trails recorded in Volume 58-013A of Plats of Dane County on pages 69 & 70 as Document No. 3654198;

thence along said East line of Lot 15 of Tumbledown Trails North 00 degrees 30 minutes 41 seconds East, 299.85 feet to the North line of Said Lot 15;

thence along said North line of Lot 15 and continuing South 89 degrees 48 minutes 28 seconds West, 366.04 feet the East line of Lot 12 of said Tumbledown Trails;

thence along said East line of Lot 12 North 00 degrees 30 minutes 41 seconds East, 30.00 feet to the South line of the Northwest Quarter of aforesaid Section 29 also being the North line of said Lot 12;

thence along said South line of the Northwest Quarter of Section 29 South 89 degrees 48 minutes 28 seconds West, 260.61 feet to the West line of said Lot 12 of Tumbledown Trails;

thence along said West line of Lot 12 South 00 degrees 30 minutes 41 seconds West, 30.00 feet to the North line of Lot 11 of said Tumbledown Trails;

thence along the said North line of Lot 11 and continuing South 89 degrees 48 minutes 28 seconds West, 433.93 feet to the East line of Lot 1 of Tumbledown Farm recorded in Volume 60-088A of Plats of Dane County on pages 487-491 as Document No. 5386618;

thence along said East line of Lot 1 Tumbledown Farm North 00 degrees 21 minutes 10 seconds East, 30.00 feet to the North line of Said Lot 1 also being the aforesaid South line of the Northwest Quarter of Section 29;

thence along South line of the Northwest Quarter of Section 29 South 89 degrees 48 minutes 28 seconds East, 1327.11 feet to the East Quarter Corner of aforesaid Section 30;

thence along the South line of the Northeast Quarter of said Section 30 North 89 degrees 40 minutes 13 seconds West, 159.12 feet to the East line of Cherrywood Forest recorded in Volume 60-020A of Plats of Dane County on pages 100-101 as Document No. 5027466;

thence along said East line of Cherrywood Forest North 00 degrees 07 minutes 36 seconds East, 1117.17 feet to the North line of said Cherrywood Forest also being the South line of Lot 3 of aforesaid CSM 14062;
thence along the South line of said Lot 3 of CSM 14062 North 89 degrees 41 minutes 05 seconds East, 369.92 feet to the westerly most line of said Lot 3 of CSM 14062 also being the East line of Outlot 1 of Welcome Home recorded in Volume 60-091B of Plats of Dane County on pages 507-508 as Document No. 5398765;

thence along said East line of Outlot 1 of Welcome Home North 00 degrees 08 minutes 26 seconds East, 1060.43 feet to the northerly Right-of-Way line of Manistee Way;

thence along said northerly Right-of-Way line of Manistee Way North 88 degrees 29 minutes 23 seconds West, 450.79 feet to a point of tangent curve;

thence northwesterly 38.62 feet along the arc of a curve to the right, having a Radius of 25.00 feet and a Long Chord that bears North 44 degrees 08 minutes 58 seconds West, 34.89 feet to a point of tangent on the easterly Right-of-Way of Welcome Drive;

thence along said easterly Right-of-Way of Welcome Drive North 00 degrees 06 minutes 01 seconds East, 379.66 feet to a point of tangent curve;

thence northeasterly 39.36 feet along the arc of a curve to the right, having a Radius of 25.00 feet and a Long Chord that bears North 45 degrees 12 minutes 16 seconds East, 35.42 feet to a point of tangent on the aforesaid southerly Right-of-Way of Mineral Point Road;

thence along said southerly Right-of-Way of Mineral Point Road also being the westerly most segment along the northern boundary of aforesaid Lot 1 of CSM 14753 South 89 degrees 41 minutes 30 seconds East, 198.83 feet;

thence continuing along the boundary of said Lot 1 of CSM 14753 South 00 degrees 17 minutes 40 seconds West, 258.00 feet;

thence continuing along said boundary of Lot 1 of CSM 14753 South 89 degrees 53 minutes 21 seconds East, 330.00 feet;

thence continuing along said boundary of Lot 1 of CSM 14753 North 00 degrees 17 minutes 40 seconds East, 256.86 feet to the aforesaid southerly Right-of-Way line of Mineral Point Road;

thence along said southerly Right-of-Way line of Mineral Point Road South 89 degrees 41 minutes 30 seconds East, 235.33 feet to a westerly line of aforesaid Lot 3 of CSM 14062;

thence continuing along said Right-of-Way of Mineral Point Road North 00 degrees 08 minutes 09 seconds East, 10.00 feet;

thence continuing along said Right-of-Way of Mineral Point Road South 89 degrees 41 minutes 30 seconds East, 233.49 feet back to the point of beginning.

said parcel contains 5,562,580 square feet or 127.70 acres including the Right-of-Way of Pioneer Road or 5,512,650 square feet or 126.55 acres excluding the Right-of-Way of Pioneer Road.
August 23, 2019

Mr. Mike Rupiper, PE
Director of Environmental Resources Planning
Capital Area Regional Planning Commission
210 Martin Luther King Jr. Blvd., Room 362
Madison, WI 53703

Subject: Amendment Request to the Town of Middleton Urban Service Area – CARPC #1903, DNR DC-0199

Dear Mr. Rupiper:

We have completed our review of the subject sewer service area amendment request from the Town of Middleton to add approximately 128.2 acres to the Central Urban Service Area. The proposed amendment was submitted to the Department in August 2019. We hereby approve of this request.

The proposed amendment is located in the Badger Mill Creek watershed, including approximately 51.8 acres of proposed environmental corridor, for a net of approximately 76.4 developable acres to the Central Urban Service Area.

The Department finds that the proposed amendment is consistent with water quality standards under section 281.15, Wis. Stats., and is hereby approved with the following conditions as recommended by CARPC in their August 2019 letter titled: Water Quality Management Letter for Sewer Service Area Amendment Request #1903 - Central USA - Town of Middleton:

The Town of Middleton will demonstrate continued commitment to pursue the following:

1. Execute an agreement with the City of Madison for the provision of sanitary sewer service to the amendment area.
2. Submit a detailed stormwater management plan for Regional Planning Commission staff review and approval (in conjunction with DCL&WCD and City of Madison staff) prior to any land disturbing activities in the amendment area. The stormwater management plan shall include the following:
   a. Install stormwater and erosion control practices prior to other land disturbing activities. Protect infiltration practices from compaction and sedimentation during land disturbing activities.
   b. Control peak rates of runoff for the 1-, 2-, 10-, and 100-year 24-hour design storms to pre-development levels, in accordance with the City of Madison Stormwater Ordinance.
   c. Provide at least 80% sediment control for the amendment area based on the average annual rainfall, with a minimum of 60% of that control occurring prior to infiltration, in accordance with the City of Madison Stormwater Ordinance.
   d. Maintain the post development stay-on volume to at least 90% of the pre-development stay-on volume for the average annual rainfall period, in accordance with the City of Madison Stormwater Ordinance.
   e. Maintain pre-development groundwater recharge rates from the Wisconsin Geological and Natural History Survey’s 2012 report, Groundwater Recharge in Dane County, Wisconsin,
Estimated by a GIS-Based Water-Balance Model (a range of 9 to 10 inches/year for the amendment area) or by a site specific analysis, in accordance with the Dane County Stormwater Ordinance.

f. Include provisions and practices to reduce the temperature of runoff, in accordance with the City of Madison Stormwater Ordinance.

g. Meet the City of Madison Stormwater Ordinance requirement for discharge off-site to other private lands.

3. Stormwater management facilities shall be placed in public outlots whenever feasible and designated as environmental corridor. Easements and perpetual legal maintenance agreements with the Town, to allow the Town to maintain stormwater management facilities if owners fail to do so, shall be provided for any facilities located on private property.

4. Delineate environmental corridors to include delineated wetlands and their buffers, the constructed drainageway and associated floodplain, stormwater management areas and open space to meet the Environmental Corridor Policies and Criteria adopted in the Dane County Water Quality Plan. Submit plats showing environmental corridors for Regional Planning Commission staff review and approval prior to recording.

5. Including a notice in the Declaration of Covenants and Restrictions for the development that states there is a potential concern with high nitrates in the area and that recommends property owners perform annual testing for nitrates.

6. Continue to encourage the responsible use of deicers and water softeners by participating in the trainings and outreach activities of the Wisconsin Salt Wise Partnership.

The Department also supports the recommendations that the Town of Middleton pursue the following:

1. Request a formal Endangered Resources Review by the WDNR or one of their certified reviewers for potential impacts to endangered resources like rare plants, animals and natural communities and take necessary habitat protection measures if species are found.

2. Collaborate with watershed-wide efforts to share information on activities and concerns within the Badger Mill Creek watershed and to coordinate efforts.

3. Work with the City of Madison to update the watershed model (XP-SWMM) for this part of the watershed to reflect post-development conditions.

4. Include educational information in Town newsletters about the potential for nitrates in private wells in the Town and encourage residents to test their wells regularly for bacteria and nitrates on a yearly basis, or whenever there are changes in taste, color or odor.

Statewide AWQM Plan Amendment
This amendment is a formal update to the state’s Areawide Water Quality Management Plan and the Dane County Water Quality Plan and will be forwarded to the US Environmental Protection Agency to meet the requirements of the Clean Water Act of 1987 (Public Law 92-500 as amended by Public Law 95-217) and outlined in the federal regulations 40 CFR, Part 35. This review is an integrated analysis action under s. NR 150.20 (2) (a) 3, Wis. Adm. Code. By means of this review, the Department has complied with ch. NR 150, Wis. Adm. Code, and with s. 1.11, Wis. Stats. The approval of this sewer service area amendment does not constitute approval of any other local, state, or federal permit that may be required for sewer construction or associated land development activities.

Appeal Rights:
Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to sections 227.52 and 227.53, Wis. Stats., a party has 30 days after the decision is mailed, or otherwise served by the Department, to file a petition with the
appropriate circuit court and serve the petition on the Department. Such a petition for judicial review must name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to section 227.42, Wis. Stats., a party has 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. All requests for contested case hearings must be made in accordance with section NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with section NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing does not extend the 30-day period for filing a petition for judicial review.

Sincerely,

[Signature]

Timothy R. Asplund
Monitoring Section Chief
Bureau of Water Quality

cc:
Larry Palm – Executive Chairperson, CARPC
Kris Hampton – Secretary, CARPC
Lisa Helmuth – Water Resources Management Specialist, DNR
Linnea Rock – Water Resources Management Specialist, DNR
Matt Droese – Wastewater Engineer Trainee, DNR
Mike Sorge – South Central Water Resources Supervisor, DNR
Tim Ryan – South Central Wastewater Supervisor, DNR
Greg DiMiceli – Administrator, Town of Middleton
Rod Zubella – Vierbicher, Inc.
Map 1 Amendment Area

Proposed Amendment to the Dane County Water Quality Plan, Revising the Sewer Service Area Boundary and Environmental Corridors in the Central Urban Service Area

Date: 06/11/2019

Service Area to be Added (128.2 acres)
Incorporated Area
Existing Service Area
Environmental Corridor to be Added (51.8 acres)
Existing Environmental Corridors

Prepared by staff of the CARPC.
August 8, 2019

Mr. Timothy R. Asplund
Monitoring Section Chief
WDNR – Bureau of Water Quality
101 S. Webster Street
Madison, WI 53707-7921

Re: Water Quality Management Letter for Sewer Service Area Amendment Request #1903 – Central USA – Town of Middleton

Dear Mr. Asplund,

The Town of Middleton has submitted a sewer service area amendment application to the Capital Area Regional Planning Commission requesting an expansion of the Central Urban Service Area. The proposed amendment is located in the Badger Mill Creek watershed (HUC 12: 070900040201). It includes the addition of approximately 128.2 acres of land, including approximately 51.8 acres of proposed environmental corridor, for a net of approximately 76.4 developable acres to the Central Urban Service Area. A public hearing was held on the proposed amendment at the July 11, 2019 Regional Planning Commission meeting. The Town’s application and the Commission staff’s analysis report of the proposed amendment have been submitted to the Department’s Surface Water Integrated Monitoring System.

It is the Capital Area Regional Planning Commission staff’s opinion that the proposed amendment is consistent with water quality standards under Wis. Stat. § 281.15, with the conditions of approval identified below. Additional actions have also been recommended below to further improve water quality and environmental resource management.

At our August 8, 2019 meeting, the Capital Area Regional Planning Commission voted to recommend approval of this amendment to the Wisconsin Department of Natural Resources, based on the land uses and services proposed, and conditioned on the continued commitment of the Town of Middleton to pursue the following:

1. Execute an agreement with the City of Madison for the provision of sanitary sewer service to the amendment area.

2. Submit a detailed stormwater management plan for Regional Planning Commission staff review and approval (in conjunction with DCL&WCD and City of Madison staff) prior to any land disturbing activities in the amendment area. The stormwater management plan shall include the following:
Mr. Timothy R. Asplund
August 8, 2019
Page 2

a. Install stormwater and erosion control practices prior to other land disturbing activities. Protect infiltration practices from compaction and sedimentation during land disturbing activities.

b. Control peak rates of runoff for the 1-, 2-, 10-, and 100-year 24-hour design storms to pre-development levels, in accordance with the City of Madison Stormwater Ordinance.

c. Provide at least 80% sediment control for the amendment area based on the average annual rainfall, with a minimum of 60% of that control occurring prior to infiltration, in accordance with the City of Madison Stormwater Ordinance.

d. Maintain the post development stay-on volume to at least 90% of the pre-development stay-on volume for the average annual rainfall period, in accordance with the City of Madison Stormwater Ordinance.

e. Maintain pre-development groundwater recharge rates from the Wisconsin Geological and Natural History Survey’s 2012 report, Groundwater Recharge in Dane County, Wisconsin, Estimated by a GIS-Based Water-Balance Model (a range of 9 to 10 inches/year for the amendment area) or by a site specific analysis, in accordance with the Dane County Stormwater Ordinance.

f. Include provisions and practices to reduce the temperature of runoff, in accordance with the City of Madison Stormwater Ordinance.

g. Meet the City of Madison Stormwater Ordinance requirement for discharge off-site to other private lands.

3. Stormwater management facilities shall be placed in public outlots whenever feasible and designated as environmental corridor. Easements and perpetual legal maintenance agreements with the Town, to allow the Town to maintain stormwater management facilities if owners fail to do so, shall be provided for any facilities located on private property.

4. Delineate environmental corridors to include delineated wetlands and their buffers, the constructed drainageway and associated floodplain, stormwater management areas and open space to meet the Environmental Corridor Policies and Criteria adopted in the Dane County Water Quality Plan. Submit plats showing environmental corridors for Regional Planning Commission staff review and approval prior to recording.

5. Including a notice in the Declaration of Covenants and Restrictions for the development that states there is a potential concern with high nitrates in the area and that recommends property owners perform annual testing for nitrates.

6. Continue to encourage the responsible use of deicers and water softeners by participating in the trainings and outreach activities of the Wisconsin Salt Wise Partnership.
It is also recommended that the Town of Middleton pursue the following:

1. Request a formal Endangered Resources Review by the WDNR or one of their certified reviewers for potential impacts to endangered resources like rare plants, animals and natural communities and take necessary habitat protection measures if species are found.

2. Collaborate with watershed-wide efforts to share information on activities and concerns within the Badger Mill Creek watershed and to coordinate efforts.

3. Work with the City of Madison to update the watershed model (XP-SWMM) for this part of the watershed to reflect post-development conditions.

4. Include educational information in Town newsletters about the potential for nitrates in private wells in the Town and encourage residents to test their wells regularly for bacteria and nitrates on a yearly basis, or whenever there are changes in taste, color or odor.

If you have any questions regarding this matter, please do not hesitate to contact Mike Rupiper, the Commission’s Director of Environmental Resources Planning.

Sincerely,

Larry Palm
Executive Chairperson

Kris Hampton
Secretary

cc: Mr. Greg DiMiceli, Administrator, Town of Middleton
    Mr. Rod Zubella, Vierbicher, Inc.
Legislation Details (With Text)

File #: 56252  Version: 1  Name: Creating the Pioneer Pointe Sanitary Sewer District & Authorizing the Mayor & City Clerk to enter into an Intergovernmental Agreement with the Town of Middleton for the City of Madison Sewer Utility to provide sanitary sewer service to the Pioneer Pointe

Type: Resolution  Status: Passed

File created: 6/7/2019  In control: BOARD OF PUBLIC WORKS

On agenda: 7/2/2019  Final action: 7/16/2019

Enactment date: 7/22/2019  Enactment #: RES-19-00532

Title: Creating the Pioneer Pointe Sanitary Sewer District and Authorizing the Mayor and City Clerk to enter into an Intergovernmental Agreement with the Town of Middleton for the City of Madison Sewer Utility to provide sanitary sewer service to the Pioneer Pointe Sewer District, consisting of lands located west of Pioneer Road, south of Mineral Point Road and east of Welcome Drive. (9th AD)

Sponsors: Keith Furman

Indexes:

Code sections:


<table>
<thead>
<tr>
<th>Date</th>
<th>Ver.</th>
<th>Action By</th>
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<td>6/24/2019</td>
<td>1</td>
<td>Engineering Division</td>
<td>Referred for Introduction</td>
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No Appropriation Required. The improvements will be built by the developer. Any maintenance costs of the infrastructure will be funded accordingly via the Sewer Utility rates in future years via the annual budget process.

Creating the Pioneer Pointe Sanitary Sewer District and Authorizing the Mayor and City Clerk to enter into an Intergovernmental Agreement with the Town of Middleton for the City of Madison Sewer Utility to provide sanitary sewer service to the Pioneer Pointe Sewer District, consisting of lands located west of Pioneer Road, south of Mineral Point Road and east of Welcome Drive. (9th AD)

WHEREAS, under the terms of the Final City of Madison and Town of Middleton Cooperative Plan Under Section 66.0307, Wisconsin Statutes dated September 29, 2003, Pioneer Road is to generally serve as the municipal boundary between the City and the Town through at least 2042; and,

WHEREAS, Jeff Haen, on behalf of JEKY, LLC (the “Developer”), has proposed a 92 lot redevelopment of the Tumbledown Trails Golf Course (89 single family, 1 commercial lot, a clubhouse and a maintenance building lot) named Pioneer Pointe, which lands are located immediately west of Pioneer Road, south of Mineral Point Road, and east of Welcome Drive; and,

WHEREAS, the Developer has requested connection to the City of Madison sanitary sewer main in Pioneer

Printed on 2/25/2020
Road adjacent to the proposed Pioneer Pointe development; and,

WHEREAS, the Madison Sewer Utility has determined that it has sufficient downstream capacity to extend sanitary sewer service to this area; and,

WHEREAS developing the providing sanitary sewer to properties is the environmentally sustainable solution; and

WHEREAS, under MGO Sec. 35.02(4)(b), property outside of the City may be served by the City’s sewerage system if it is in a sewer district established by the City, service is in conformance with the City’s rules, regulations and ordinances, all sewer related charges are accounted for, necessary permits are obtained, and the connection will be in the best interests of the City; and,

WHEREAS, the City and the Town of Middleton have come to terms on an agreement that would meet the provisions of Sec. 35.02(4)(b) and allow for the provision of sanitary sewer service to the Pioneer Pointe development; and,

WHEREAS, consistent with other developments in the City, the sewer improvements will be built by the Developer to the City of Madison Standards and owned and maintained by the City of Madison Sewer Utility after project completion and acceptance; and,

WHEREAS, it is understood by the parties involved that this sewer service agreement with the Town is contingent upon the execution by Hawk’s Landing Golf Land LLC and Hawks Landing Golf Corp., both Jeff Haen entities, of a Maintenance agreement with the City of Madison (RES-19-00436, File #55834) for the maintenance of stormwater management facilities located in the Hawk’s Landing Golf Club Plat Environmental Corridor.

NOW, THEREFORE BE IT RESOLVED that, subject to the approval of the Town’s pending Central Urban Service Area amendment to allow for sanitary sewer service to the area, the execution of the Maintenance Agreement for the Hawk’s Landing Golf Club Plat Environmental Corridor between the City and Hawks Golf Land, LLC and Hawks Landing Golf Corp., and pursuant to MGO Sec. 35.02(4)(b), the Common Council hereby creates the Pioneer Pointe Sewer District and finds that provision of sanitary sewer service to this District, as shown in the attached Exhibit, is in the best interests of the City; and,

BE IT FURTHER RESOLVED that the Mayor and the City Clerk are hereby authorized to enter into an Intergovernmental Agreement with the Town of Middleton for the City of Madison Sewer Utility to provide sanitary sewer service to the Pioneer Pointe Sewer District, on terms consistent with the agreement attached hereto, in a format approved by the City Attorney and the City Engineer.
Minutes are not official until approved at subsequent meeting.

Town of Middleton
Meeting Minutes
Town Board

Monday, July 1, 2019
6:30 PM
7555 W. Old Sauk Road
Verona, WI 53593

Call to Order. A regular meeting of the Town Board was held at the Town Hall, 7555 W. Old Sauk Road Verona, WI 53593 beginning at 6:30 PM.

Present were Town Board Chair Cynthia Richson, Supervisor Richard Oberle, Supervisor Brent Renteria, Supervisor Denise Schmidt, and Supervisor Tom Stemrich.

Also present were Greg DiMiceli, Administrator/Treasurer; Barbara Roesslein, Clerk; Al Reuter, Attorney for the Town, Reuter, Whitish & Evans, S.C.; Rod Zubella, Town Engineer, Vierbicher; and members of the public.

1. Proof of Posting and Notice
   Clerk Roesslein affirmed that the agenda had been posted at the Town Hall, Settler's Prairie Park, Voss Park, published on the Town's website, and emailed to the newspaper and the Town's subscriber list.

2. Pledge of Allegiance
   The pledge was recited.

3. Public Input
   (for items not on the agenda and limited to five minutes per speaker).
   Jeff Haen, 7509 Felton Drive, informed the Board of overgrown grass and lack of maintenance at the Tumbledown Trails Golf Course property and requested that the Town do something about it. Administrator DiMiceli explained that he had received a complaint on the conditions of the property. DiMiceli stated he contacted Mr. Haen regarding the complaint to the property because he thought Mr. Haen had purchased the property. Mr. Haen is closing on the property on 7/8/19, thus the property is still under the ownership of Marc Watts and the Watts family. Mr. Haen is concerned that he will be penalized regarding the conditions of the property after the closing. DiMiceli has requested that Weed Commissioner Oberle visit the site to assess the conditions of the property to determine if weeds are an issue. Supervisor Renteria stated the issue is between the two owners of the property.
4. Review and possible action on the proposed Pioneer Pointe Sewer Agreement with the City of Madison - Attorney for the Town, Al Reuter - Reuter, Whitish & Evans, S.C.

Town Attorney Al Reuter, Reuter, Whitish & Evans, S.C., stated that the Town Board had approved the draft Pioneer Pointe Sewer Agreement with the City of Madison dated 2/20/19 on 2/25/19. The City of Madison has since returned the agreement with requested final changes to the draft. Town Attorney Reuter reviewed the requested changes with input by Town Engineer Rod Zubella, Vierbicher. There was a brief discussion on who would be responsible to repairs of the road if it needs to be opened to make repairs to the sewer main/laterals. It was noted that a road opening permit would be issued by the Town, which would stipulate that the road has to be restored back to the conditions prior to the opening of the road. It was noted that an amendment to the right-of-way ordinance could establish requirements on road openings.

Oberle made a motion, seconded by Stemrich, to approve the proposed Sewer Agreement with the City of Madison for Pioneer Pointe and to authorize the Town Chair and Town Administrator to sign the Agreement on behalf of the Town of Middleton upon the execution of a developer’s agreement between the Town of Middleton and the Developer, JEKY, LLC. The motion carried.

5. Consideration and possible approval of the Draft 6/17/19 Board Meeting Minutes

Renteria made a motion, seconded by Schmidt, to approve the Draft 6/17/19 Board Meeting Minutes with correction of language to paragraph on page 5, Item 14, from "structural issue" to "structural deficiencies". The motion carried.

6. Departmental Reports

DiMiceli highlighted the contents of the Staff Report and Crew Report. DiMiceli proposed the following dates for the 2020 Budget Workshops:
- Tuesday, 9/17/19
- Wednesday, 9/18/19
- Wednesday, 9/25/19
- Thursday, 9/26/19 (if needed)

7. Ratify Town Board Chair re-appointment of Brian Borakove as Town Finance Committee Chair for another one-year term set to expire on 6/30/20

Richson made a motion, seconded by Stemrich, to re-appoint Brian Borakove as Town Finance Committee Chair for a one-year term to expire on 6/30/20. The motion carried.

8. Ratify Town Board Chair re-appointment of David Wagner as Town Public Works & Town Services Committee Chair for another one-year term set to expire on 6/30/20

Richson made a motion, seconded by Schmidt, to re-appoint David Wagner as Town
COMMISSION AGENDA REPORT  
Meeting of March 12, 2020  

Creation of a Commission Workgroup for the CED Performance Review

Lead Staff: D. Michael Mucha, Chief Engineer and Director

Requested Action: The Commission establishes a CED performance review subcommittee of members as nominated and elected.

Attachments:
Attachment 1: Commission Policy ATT-4
Attachment 2: Resolution 2020-03-12-R7

Financial Impact: None.

Background:
In conformance with Commission policy CER-2C, the Commission evaluates the performance of the Chief Engineer and Director (CED). The CED is evaluated based on his achievement of District goals and outcomes in a manner that does not violate executive limitations. In late 2017, the Commission established a process for the evaluation outlined in ATT-4 which indicates that the Commission may empower a working group of commissioners to lead the review effort, review materials, solicit 360-degree feedback, meet with the CED as necessary and make recommendations to the full Commission. 2018 was the first year the new process was used.

Analysis and Options:
Recommended Option: The Commission establishes a CED performance review subcommittee of members as nominated and elected.

Key considerations:
- The review is limited to the CED’s performance for 2019.
- In prior years, the Commission selected a working group of three commissioners.
- The work effort is approximately 35-40 hours outside of normal Commission meetings and involved approximately 7 subcommittee meetings, with a few that were a half day or more.
• Past work group members indicated that they learned so much about the District, feel a stronger connection and are better able to serve. Furthermore, it was helpful to understand some of the details without diving into them.
• The 2018 review did not include external key stakeholder feedback.

**Option 1:** Modify the process to meet the interests and workload needs of the Commission.

**Key consideration:**
• There may be some learnings from running the full process last year and the Commission may desire to make adjustments.

**Next Steps:**
The Commission will receive the CED’s 2019 performance report which will launch the beginning of the process.
Madison Metropolitan Sewerage District
INCORPORATED INTO COMMISSION POLICY BY REFERENCE

Title: MMSD Chief Engineer & Director Annual Performance Evaluation Process
Attachment Number: ATT – 4
Adopted: 10-12-17
Revised: 12-13-18

Every year, the commission evaluates the performance of the chief engineer & director (CED). This evaluation informs the setting of goals and outcomes for the district and for the CED for the following calendar year. It is also the basis for commission consideration of a performance-based adjustment to the CED’s salary, subject to established pay policies. The commission may empower a working group of commissioners to lead on this effort, review materials, solicit 360-degree feedback, meet with the CED as necessary and make recommendations to the commission.

The commission has established a process to evaluate the performance of the CED each year. That process includes the following:

**ANNUAL CED PERFORMANCE EVALUATION:**

I. **CED Self Evaluation**
The CED submits to the commission a self-evaluation that includes her/his report on the status of fulfilling district goals and outcomes for the previous calendar/budget year in a manner that does not violate executive limitations. This is done in the first several months of the year, and the focus is on the previous calendar/budget year (and on the goals and outcomes approved by the commission for the year in question).

II. **360-degree Feedback**
The commission will solicit performance feedback from all directions within the organization and potentially from outside. This may include key employees and stakeholders. If a commission workgroup is employed to carry out the 360-degree review, the workgroup should engage the full commission in providing 360-feedback at this stage. This too will happen starting in the first several months of the year with a focus on the previous calendar/budget year.

There are two stated goals for this process:
- For the commission to receive a variety of viewpoints on the CED’s skills and contributions.
- To support/reinforce the CED’s role and priorities as s/he leads the district forward.

The following is a summary of the 360-degree feedback process.
A. **Director Feedback**
Each director will have the opportunity to meet with a member or two of the commission to answer a series of questions. These questions will be provided in advance. Meetings shall occur in a professional office setting, and the CED will make staff available to assist with setting up the meetings. The timing of these meetings will be roughly the first quarter of the year, the object of the discussions being the previous calendar/budget year. Questions for the directors will be at the discretion of the commission workgroup. For illustrative purposes, questions employed in the past are as follows:

1. How well does the CED promote an organizational perspective when analyzing situations? Provide specifics.
2. How well does the CED encourage efficiency and effectiveness through innovation and process improvement? Provide specifics.
3. How well does the CED engage the executive team in collaborative and creative problem solving? Provide specifics.
4. How well does the CED support the department’s needs and overcoming challenges? Provide specifics.
5. What can the CED do more of or less of to improve in the areas above?
6. What is the CED currently doing really well and should continue doing?
7. What is one thing you could do to support the CED’s success in the areas identified above?

B. **Employee Leadership Council (ELC) Feedback**
The commission wishes to receive the ELC’s feedback on the CED’s performance once a year. The CED will request the ELC to provide feedback to the commission on the CED’s performance in the previous calendar/budget year. The timing of the necessary meetings will be as fits into the ELC’s schedule through the first several months of the year, with a focus on reviewing the CED’s performance in the previous calendar/budget year.

The ELC will be asked to provide responses to a set of questions generated at the discretion of the commission workgroup. For illustrative purposes, questions employed in the past are as follows:

1. How proactive is the CED in building/supporting effective working teams to address important issues? Provide specifics.
2. How well does the CED facilitate open two-way communication with employees? Provide specifics.
3. How well does the CED communicate the priorities and decisions of the district? Provide specifics.
4. What can the CED do more of or less of to improve in the areas above?
5. What is the CED currently doing really well and should continue doing?
6. What is one thing the ELC could do to support the CED’s success in the areas identified above?

C. **External Key Stakeholder Feedback**
   From time to time, there may be advantages to checking in with key external stakeholders on the quality of the working relationships with the district and the CED’s ability to build public support for the district’s work. The stakeholder groups the commission chooses to engage could change from year to year based on the specific district priorities where external engagement was active and important. The commission will work with the CED to engage selected stakeholders in a timely fashion so that this information can fit in with all of the above for a given year’s annual CED performance evaluation.

III. **Annual CED Performance Review**
   The annual review process will have three main phases: information gathering, discussion with the CED and the final performance review meeting between the commission and the CED. In the first phase, the commission or its workgroup will summarize 360-degree feedback and the CED self-evaluation. In the second phase, the commission will review this summary and provide feedback to the CED. The CED will be provided with the summary information, including commission feedback, prior to the final meeting and will be allowed an opportunity to respond. In the final phase, the commission will meet with the CED to discuss the performance review and set any performance goals for the CED in the coming year. This process should happen as early as possible in the second quarter of the year such that one of the June commission meetings can include on its agenda sufficient time for the commission to discuss and approve the review for the previous calendar/budget year.

IV. **Commission Consideration of a Performance-Based Adjustment to CED Salary**
   Following the review, and ideally at the same commission meeting as the above, the commission will consider and decide on a potential CED performance-based salary adjustment effective July 1 of that year. (The CED and full commission will meet in closed session as needed to discuss the potential for a salary adjustment.)

V. **Goal-Setting for the Following Budget/Calendar Year**
   The commission and the CED will also work together in the second quarter of each year to identify goals and outcomes for the following calendar/budget year. The agreed-upon goals and outcomes will be the evaluated as part of the annual CED performance evaluation and they will help to inform budget priorities as staff works to prepare the following year’s budget for commission deliberation and eventual approval in the fall.

   At one of the June commission meetings, the commission meets with the CED to discuss and decide on goals and outcomes for the following year, to inform both the budget process and the CED performance review process for the following year.
WHEREAS, in conformance with Commission policy CER-2C, the Commission evaluates the performance of the Chief Engineer and Director (CED), and

WHEREAS, the CED is evaluated based on his achievement of District goals and outcomes in a manner that does not violate executive limitations, and

WHEREAS, the Commission established a process for the CED’s evaluation, and

WHEREAS, the Commission may empower a working group of commissioners to lead the review effort, review materials, solicit 360-degree feedback, meet with the CED as necessary and make recommendations to the full Commission, and

THEREFORE, BE IT RESOLVED, that the Madison Metropolitan Sewerage District Commission establishes a CED performance review subcommittee of members as nominated and elected.

The above resolution was adopted by the Commissioners of the Madison Metropolitan Sewerage District at their meeting held in the District office on March 12, 2020.

MADISON METROPOLITAN SEWERAGE DISTRICT

Attested by:

Thomas Hovel, President
Mary Swanson, Secretary

Incorporated by reference: 2020 District Goals and CED Leadership Priorities
COMMISSION AGENDA REPORT
Meeting of March 12, 2020
Update on Chloride Reduction Program

Lead Staff: Kathy Lake

Requested Action: Informational purposes only

Attachments:
Attachment 1: MMSD Chloride Compliance Plan, 2020

Financial Impact: No financial impact at this time.

Background:
Using a source reduction approach to reduce the amount of chloride influent to the Nine Springs Wastewater Treatment Plant (NSWTP), the District is not only pursuing a sustainable compliance option for meeting water quality standards outlined in its discharge permit, but also providing substantial benefit to the greater Madison area, effectively embodying the District’s commitment a vision of enriching life though clean water and resource recovery.

The District’s program is one of the leading programs in the country. It remains mostly voluntary and continues to evolve with the ever-growing body of knowledge about chloride sources, reduction strategies and barriers and opportunities for reduction. The program has drawn attention from peer organizations regionally and has been a conduit for building relationships with other agencies, businesses and organizations.

While progress has been made during the first variance term, additional reductions in chloride mass are required for our effluent to reliably remain below the water quality based effluent limit. The District’s initial work on chloride reduction has uncovered new ways of problem solving and partnership building as well as helping staff to recognize new opportunities for possible reductions. While chloride has been increasing in all local water, we have strategies that work. With time and resources, change is possible.

Next Steps:
The chloride work plan relies primarily on voluntary actions to reduce chloride, but this leaves the door open for policy and regulation. Future policy or regulatory approaches will be brought to the Commission for input and direction.
Madison Metropolitan Sewerage District
Chloride Compliance Plan

CHLORIDE SOURCE REDUCTION PROGRAM
FIRST VARIANCE TERM RECAP
& VISION FOR SECOND VARIANCE TERM

Developed by the Madison Metropolitan Sewerage District Staff:
Director of Ecosystem Services: Martin Griffin
Pollution Prevention Team: Kathy Lake, Emily Jones and Catherine Harris

March 2020
Executive Summary

This document chronicles the evolution of the Madison Metropolitan Sewerage District’s (the district’s) chloride source reduction program to date, and lays out a plan for future action.

Using a source reduction approach to reduce the amount of chloride influent to the Nine Springs Wastewater Treatment Plant (NSWTP), the district is not only pursuing a sustainable compliance option for meeting water quality standards outlined in its discharge permit, but also providing substantial benefit to the greater Madison area, effectively embodying the district’s commitment a vision of enriching life though clean water and resource recovery.

The district’s program is one of the leading programs in the country. It remains mostly voluntary and continues to evolve with the ever-growing body of knowledge about chloride sources, reduction strategies, and barriers and opportunities for reduction. The program has drawn attention from peer organizations regionally and has been a conduit for building relationships with other agencies, businesses and organizations.

While progress has been made during the first variance term, additional reductions in chloride mass are required for our effluent to reliably remain below the water quality based effluent limit. The district’s initial work on chloride reduction has uncovered new ways of problem solving, partnerships, highlighted opportunities for possible reductions. While chloride has been increasing in all local water, we have strategies that work, and given time and resources, change is possible.
Contents

Executive Summary .......................................................................................................................... 2
Contents ............................................................................................................................................... 3
Background and Contextual Information ............................................................................................ 4
Permit Requirements .......................................................................................................................... 6
Compliance Options .......................................................................................................................... 7
Source Reduction Strategy .................................................................................................................. 10
   Overview of Approach ......................................................................................................................... 10
   Source Identification .......................................................................................................................... 11
   Actions .............................................................................................................................................. 13
      a. Regulation/Policy ......................................................................................................................... 13
      b. Monetary Incentives ................................................................................................................... 15
      c. Education and Engagement ..................................................................................................... 15
      d. Training ..................................................................................................................................... 16
      e. Partnerships and relationship building .................................................................................... 17
      f. Communications ......................................................................................................................... 18
         g. Reducing New Contributions .................................................................................................. 18
Current Status ....................................................................................................................................... 20
Work Plan (2019-2024) ....................................................................................................................... 23
Future Direction ................................................................................................................................... 26
References ............................................................................................................................................ 29
ATTACHMENT A - Road Salt Source Reduction Measures .................................................................. 30
   Road Salt Source Reduction - Background ....................................................................................... 30
   Road Salt Source Reduction - Evolution of Strategies ................................................................... 31
   Road Salt Source Reduction - Current Status & Next Steps ........................................................... 33
ATTACHMENT B - Water Softener Source Reduction ....................................................................... 34
   Water Softener Source Reduction - Background ........................................................................... 34
   Water Softener Source Reduction - Evolution of Strategies ......................................................... 34
   Water Softener Source Reduction - Current Status & Next Steps ................................................ 40
ATTACHMENT C - Who Is Salt Wise? ................................................................................................ 41
   Wisconsin Salt Wise Partnership Overview .................................................................................. 41
ATTACHMENT D - Summary of Chloride Incentives 2015-18 .......................................................... 42
   Commercial & Industrial Salt Reduction Rebates ........................................................................ 42
   Elution Study Rebates ..................................................................................................................... 43
   Professional/Innovation Grants ....................................................................................................... 44
   Road Salt Reduction Grants ........................................................................................................... 45
ATTACHMENT E – Annual Chloride Reports to DNR ...................................................................... 46
ATTACHMENT F – Reference Documents ......................................................................................... 47
ATTACHMENT G – Submitted 2019-2024 Pollutant Minimization Plan .................................................. 48
Background and Contextual Information

Salt (sodium chloride) is universal. There are an estimated 14,000 uses for salt, from cooking to manufacturing to water treatment. To meet the demand for salt, nearly 300 million metric tons of salt are produced globally each year. Over history, salt has evolved from a precious substance used as currency to a relatively abundant and cheap material. Its availability and inexpensiveness have created a challenge: it’s easy to use too much salt.

Chloride is the negatively charged ion of chloride salts, such as sodium chloride or potassium chloride. This chemical is naturally found in fresh and salt water bodies, and is essential to life. In fresh water, chloride concentration is usually between 1 and 100 milligrams per liter (mg/L). Anthropogenic chloride contributions include road salt, water softeners, industrial sources, urban and agricultural runoff, discharge from wastewater treatment plants, and oil and gas well drilling.

Although salt dissolves in water and appears to disappear, it persists in the water. High concentrations of chloride can harm freshwater and terrestrial ecosystems. In freshwater aquatic ecosystems, chloride disrupts osmoregulation, reproduction, and plant growth activities in fresh water (Hunt, Herron and Green 2012). On land, presence of chloride, primarily in irrigation water, can inhibit crop growth due to salinization of soils and cause legal issues for property and water rights.

Due to its environmental impacts, chloride is regulated by the Environmental Protection Agency (EPA) as a water pollutant under the Clean Water Act. Under section 304(a)(1) of the Clean Water Act (33 U.S.C 1314(a)(1)), the EPA is required to set limits based on latest scientific knowledge on water quality criteria for the protection of health, welfare, biodiversity of identifiable species. The 1972 amendments to the Clean Water Act include rules for pollution discharge to natural water bodies. Pollution discharges must be permitted by the National Pollution Discharge Elimination System (NPDES). The EPA recommendations are used as a guideline for states to make decisions on levels for pollutant discharge. These include both acute and chronic criteria. Acute toxicity is the amount of a substance that causes adverse impact in a short period of time or a dose while chronic toxicity is the amount of a substance that causes adverse effects due to continued administration or repeated doses. In 1988, the EPA established limits for chloride that are still in use today: a chronic limit of 230 mg/L and the acute limit of 860 mg/L. The chronic toxicity limit equates to about 1 teaspoon of salt dissolved in five gallons of water (Environmental Protection Agency, 1986).

At the state level, the Wisconsin Department of Natural Resources (DNR) administers and enforces the federal NPDES requirement as the Wisconsin Pollutant Discharge Elimination System (WPDES). DNR established state-specific chloride limits of 395 mg/L (chronic) and 757 mg/L (acute) (Wis. Admn. Code NR 106.80)(Schmidt, 2000). These limits translate water quality-based effluent limits (WQBELs) for some WPDES permit holders, including Madison Metropolitan Sewerage District.

Locally, salt is most commonly used for softening hard water; for deicing sidewalks, parking lots and roadways; for a variety of industrial processes and for human consumption. All salt that is imported to the state and county ends up in the environment in some way, whether through lakes, streams, wetlands or land. The majority ends up in our freshwater resources. Dane County-Madison public health department has shown in their annual Road Salt Report(s) that all water bodies in the county are impacted by chloride. Monitoring indicates increasing levels of chloride in area lakes (see Figure 1 below), area drinking water wells (Figure 2 below), wetlands (UW Limnology/John Magnuson’s Studies of Class of 1918 Marsh), stormwater (as
exhibited by local USGS monitoring) and wastewater (regional wastewater effluent discharge chloride concentrations reported by Capital Area Regional Planning Commission).

Figure 1: Madison Dane County Public Health 2016 Annual Road Salt Report

![Graph showing chloride concentrations in Yahara Lakes from 1960 to 2020](image)

Figure 2: Madison Water Utility Wells 30 Year Comparison of Min/Median/Max Chloride Concentrations

![Graph showing chloride concentration over years](image)

At Madison Metropolitan Sewerage District’s Nine Springs Wastewater Treatment Plant (NSWTP), chloride concentrations followed a similar trend in recent decades (Figure 3). Like most wastewater treatment plants, NSWTP is unable to remove dissolved solids like chloride. All the chloride that reaches the plant passes through the plant and into the environment in the treated effluent.
While reliably below the acute toxicity criterion, NSWTP effluent does not always meet the chronic WQBEL. In 2010, the DNR added a chloride discharge limit to the district’s permit. The eventual limit that the treatment plant will need to meet for chloride is a weekly average of 395 mg/L.

Because of the challenges, expense and environmental impacts relating to treatment, the state Administrative Code provides for chloride variances [NR106.83] in cases in which technology to remove chloride would be prohibitively expensive and source reduction activities would be preferable to end-of-pipe approaches. Like variances for other pollutants, chloride variances may be given on a facility-specific basis for the length of the WPDES permit term, and must be approved by DNR and the US EPA. If granted, the variance requires implementing a source reduction program aimed at reducing the chloride coming to the treatment plant. Interim discharge limits accompanying the variance are higher than the WQBEL, but are intended to become more stringent over time and includes the requirement that source reduction measures be put into practice (Section 283.15 Wis. Stats).

Over fifty municipal treatment plants in the state, including NSWTP, currently have effluent chloride levels higher than the state’s water quality standard and have requested and are operating with a variance to exceed the Wisconsin Water Quality Standards.

The district applied for and received its first chloride variance with the WPDES permit reissuance on October 1, 2010. This date is considered the start the district’s chloride source reduction program.

**Permit Requirements**

The district’s WPDES permit, issued in 2010, specifies an interim weekly average interim concentration limit of 481 mg/L. It also included a target value of 430 mg/l. When the district’s previous permit expired on 9/30/2015, the target value of 430mg/L became the effective interim limit. The 2010 permit also restricts the district to a weekly average mass of 200,000 pounds per day, but the district has never exceeded this weekly mass.
average mass. The concentration limit is the more challenging requirement for the district to consistently meet.

To monitor for chloride at the plant, as is specified in the district’s 2010 WPDES permit, daily, 24-hour composite samples are taken in the effluent building and are analyzed for chloride concentration. Continuous effluent flow is also measured at the same point. Daily average chloride mass is calculated based off of flow and concentration.

The district has conducted periodic special sampling as part of source reduction efforts. Special sampling projects have collected influent samples, daily pumping station samples, and other samples in the collection system.

As a requirement of the chloride variance, the district is required to implement source reduction actions specified in NR 106. These required actions include the following, which are referred to in NR 106 as Tier 1 activities:

- Identifying sources of chloride to the sewer system
- Educating homeowners on the impact of chloride from residential water softeners
- Discussing options available for increasing softeners’ salt efficiency and requesting voluntary reductions
- Recommending residential softener tune-ups on a voluntary basis
- Requesting voluntary support from local water softening businesses
- Educating licensed installers and self-installers of softeners on providing optional hard water for outside faucets
- Requesting voluntary reductions in chloride from industrial and commercial contributors

To date, the district has taken all these actions as part of its chloride reduction program. These activities commenced in 2010 and the successes and lessons learned have been documented in the annual reports submitted to the Wisconsin DNR (full list of references to annual reports in ATTACHMENT E –Annual Chloride Reports to DNR).

Compliance Options

The district has been granted a chloride variance, but the nature of variances is that they are temporary. Eventually, the district will need to consistently comply with the 395 mg/L criterion. There are several options that the district could select to achieve compliance with this limit. This section outlines those options and feasibility of each.

Key points:

- Technological options to reduce chloride exist, but are expensive, energy-intensive, and would have limited environmental outcomes.
- Source reduction is a less expensive, more comprehensive, and more sustainable approach to chloride compliance than plant upgrades.
The district evaluated three options for achieving the chloride WQBEL:

Option 1: Treatment at the plant
Option 2: Source softening at selected wellheads
Option 3: Chloride source reduction with variance

The district contracted with consulting firm AECOM to complete a chloride compliance study in 2014. This study identified sources of chloride to the treatment plant and evaluated various options for complying with the chloride limit. Each approach was evaluated using a triple bottom line analysis, taking into account the financial, environmental and social impacts of implementing these approaches. This study also developed cost estimates and alternatives for the various treatment and wellhead softening options (AECOM 2015).

The study indicated that no technological strategy would achieve chloride compliance without significant undesirable impacts on rates, greenhouse gas emissions and/or overall water quality. Softening water at selected wellheads and adding chloride removal treatment at NSWTP would each cost hundreds of millions of dollars while having substantial social and environmental impacts (Figure 4).

Figure 4: Net Present Value of Costs to Treat Chloride & Perspective

Implementing chloride removal technology at the treatment plant would require significant investment and generate a large amount of waste and emissions, while treating only a small fraction of the district’s overall flow. The lowest-cost treatment option at the plant (reverse osmosis and brine minimization through evaporation and crystallization) would cost $464 million and would generate 46,500 metric tons of carbon dioxide equivalents each year.
Softening water at select drinking water wellheads, eliminating the need for individual softeners, would be logistically and politically challenging. Installing the necessary infrastructure would require buy-in and coordination between multiple utilities. Additionally, this option would require a widespread effort to remove individual softeners in homes and businesses.

Projected costs of treating for chloride are compared with projected costs of phosphorus reduction in Figure 4. The costs of technological options for reducing chloride translate to an increase in rates from 55 to 500 percent, depending on the selected option.

Source reduction was also evaluated as a compliance option. By initiating some actions outlined in NR 106, the district collected data to calculate potential costs and feasibility of source reduction as an alternative to building treatment or softening at wellheads. Efforts to improve home water softeners and gathering information about water softeners demonstrated that chloride source reduction through water softener upgrades is possible. Source reduction became a preferred compliance option because it could be achieved at a fraction of the cost of technological options.

At the time of the AECOM study, the average annual chloride concentration to NSWTP was 414 mg/L, and the average daily mass of chloride was approximately 140,000 pounds per day. The plant treatment option described above would treat a side stream of the district’s total daily flow, an average of 7.3 MGD. Assuming a baseline concentration of 414 mg/L, the process would remove roughly 25,000 pounds of chloride per day. At a cost of $464 million, chloride removal treatment would represent a cost of $18,560 per pound of chloride removed, per day.

Meanwhile, the district has invested $119,162 to date in incentives for water softener salt reduction for a reported reduction of 1894 pounds of chloride per day, or $63 per pound of chloride, per day. This total does not represent all dollars invested in chloride source reduction, but is illustrative of the substantial difference between the costs of treatment and source reduction.

Additionally, some reductions have occurred without intervention by the district, particularly from the closure of the former Kraft Heinz plant. We have witnessed businesses changing their policies and procedures relating to salt use without district investment. We believe it is reasonable to expect some chloride reductions to occur without district investment as momentum around salt reduction grows.

Beyond just cost, source reduction has the added benefit of achieving greater environmental outcomes than treatment technology, protecting upstream lakes and drinking water from chloride pollution.

This suite of compliance options is outlined through numerous presentations to the commission, and internal documents like the new initiative proposal and a sustainable action map approved by district leaders in 2015 (ATTACHMENT F – Reference Documents). Also included in ATTACHMENT F, is a factsheet created to accompany the district’s second chloride variance application, which presents a succinct comparison of compliance options and why the district is prioritizing source reduction.
Source Reduction Strategy

Having determined that source reduction is the most cost-effective and comprehensive strategy to reduce chloride, the district evaluated and explored activities to achieve necessary reductions. This section describes the evolution of the district’s chloride reduction strategy to its current form.

**Key points:**

- The district receives chloride from many sources, including direct sources (discharges from water softeners and industrial processes) and indirect source (inflow and infiltration of surface and ground water containing chloride)
- The district should focus its reduction efforts on all sources of chloride to the treatment plant, and invest resources in reducing water softener salt, road salt and other chloride sources where a high source reduction outcome can be achieved with low effort/investment.

Overview of Approach

In developing strategies to achieve compliance through chloride source reduction, the district has prioritized actions that produce the highest possible outcome with the least effort and cost (Figure 5). Through careful evaluation of trade-offs, cost/benefit, opportunities, and potential reductions, staff arrived at current plan(s) for chloride source reduction- the Pollutant Minimization Plan (PMP) (ATTACHMENT G – Submitted 2019-2024 Pollutant Minimization Plan), and Work Plan (2019-2024), below.

*Figure 5: Chloride Program Guiding Principle*

As is suggested in NR 106, the district began crafting source reduction plans by looking at sources of chloride influent to the treatment plant (later discussed in the “Source Identification” section). Following identification of sources, district staff developed various strategies to address these sources. Figure 6 demonstrates a suite of strategies for reducing chloride. The district has implemented actions in all these categories in an effort to identify the strategies that reduce chloride in high outcomes for relatively low effort and resources.
The following sections summarize district actions to date in each of these categories.

**Source Identification**

Sector surveys, monitoring of the collection system and industrial users, in-plant evaluation of chloride chemical use and household water softener evaluation helped the district approximate the distribution of the various sources of chloride to the district.

As shown in Figure 7, water softeners were estimated to be the largest influent source of chloride (57 percent of total load). A large portion of the industrial load came from one large, known source (the Kraft Heinz plant), which has since left the district’s service area.

Because water softeners are the largest source of chloride to the treatment plant, the district has prioritized source reduction actions that reduce water softener salt use (summarized in ATTACHMENT B - Water Softener Source Reduction Measures). An important lesson from work to date with water softeners is that work with large, commercial-sized water softeners has been more quantifiable and more cost- and time-efficient that work with home water softeners.
Although water softeners are the majority contributors of chloride to the plant, the district has determined that addressing other chloride contributions is also important to achieving compliance. Chloride data demonstrate that an exclusive focus on water softener salt reduction however, could hinder long term progress toward permit compliance and water quality improvements other water systems in our community. Reducing road salt is important for mitigating peak loads to the sewer system, minimizing baseline chloride levels in source water, and holistically improving water quality in our region.

Seasonal peaks in chloride concentration at the wastewater treatment plant generally correlate with known melt events in winter months, and, importantly, are the reasons for most exceedances of the district’s permit limit (Figure 8). The daily chloride load can increase by tens of thousands of pounds on days coinciding with winter rain or snowmelt events. To make clear the need for higher chloride limits in the permit for the winter months compared to summer months, the district made in-depth analysis (correlations between influent chloride levels at NSWTP and winter weather) available to permit writers  (see ATTACHMENT A - Road Salt Source Reduction Measures).

An estimated eight percent of the district’s total chloride load is attributable to background chloride concentrations in municipal drinking water wells. These wells have also experienced demonstrable road salt impacts over time (Figure 2 and Figure 9). Elevated chloride in drinking water wells shrinks the amount of chloride that can be added to wastewater through human uses before threatening an exceedance of the chloride WQBEL.

Furthermore, reducing road salt is a way for the district to practice its commitment to One Water concepts while building relationships in our community. Road salt reduction efforts, described in detail in ATTACHMENT A - Road Salt Source Reduction Measures, have not only contributed to reduced chloride loading, but have also built or strengthened district relationships with other local agencies and water quality groups, particularly through the Wisconsin Salt Wise partnership.

Figure 8: Seasonality of Chloride Exceedances
Actions

There are many routes that the district could take to reduce chloride. On one extreme, the district could mandate behavior change, using its regulatory authority to require chloride reduction action among industries, water softener companies, and other sectors. On the other hand, the district could take a completely voluntary approach, which would rely on self-motivated behavior change among area salt users. The district’s goal is to use a mix of strategies that encourage primarily voluntary behavior change under constraints for accountability.

Chloride reduction actions available to the district can be grouped into the following categories:

a. Regulation/policy
b. Monetary incentives
c. Education and engagement
d. Training
e. Partnerships and relationship building
f. Communications
g. Research and innovation

The district implemented and tested actions in each of these categories during its first chloride variance term and encountered successes and challenges with different strategies. The lessons from experiences with these actions have informed the development of the current chloride reduction strategy. These experiences are summarized by category below.

a. Regulation/Policy

In general, the chloride work plan relies primarily on voluntary actions to reduce chloride, but leaves the door open for policy. The district works to support and advise on policy enacted by other policymaking bodies,
such local or state governments. Policy and regulation are powerful tools that need to be deployed strategically as to not cause undue hardship on community members or fail to address nuances of a root cause. Enacting regulation would follow evidence that voluntary measures are not achieving needed results.

Updates to the district’s Sewer Use Ordinance (SUO) in 2015 included requirements related to chloride:

- Section 4.7.2 requires customer communities to undertake chloride reduction measures, analyze their municipal wells annually and report the results to the district, and report on their deicing salt reduction activities as part of MS4 reporting.
- Section 7.2 allows for the issuance of special individual or general permits to commercial or industrial users if necessary for district compliance or operation. That is, the district could require chloride dischargers to meet certain standards or minimize their chloride discharge if needed.

The required customer community well monitoring and reporting information has been helpful in the constant re-calibration of source information that goes into annual planning.

The general permitting provision afforded by this ordinance change will be useful to the district in working with industries. Kraft Heinz (formerly Oscar Mayer), at the time the largest chloride discharger in the district’s service area, was the first industry permitted for chloride. While not a participant in the district’s pretreatment program, they were a significant source of chloride to the sewer system. Initially, the industry added monitoring and source identification. As the district started working with them, a variety of salt saving opportunities were identified. The internal monitoring identified equipment (valves) that was not operating properly. By systematically replacing the failing valves, the industry made significant chloride reductions.

The general permit provision provides a framework for other large salt users to enter into a formal relationship with the district. While the district has only issued this one chloride-only permit, additional chloride monitoring and/or management BMPs have been included in other permits.

Beyond issuing permits, the district has also considered the potential of community-wide policy related to salt reduction. Some example policies include:

- Requiring water softener upgrades at home point-of-sale.
- Offering liability protection for road salt applicators to eliminate road salt overuse based on fear of legal retribution.
- Plumbing code modifications:
  - alternative sizing criteria for building water systems
  - salt less options available
  - softening minimum efficiency standards for water softeners
  - Quantity of water softened (softening for hot water only?)
  - certification required for people installing/working on softeners
- Certification requirements for winter maintenance professionals
- Develop and promote policies that support safe winter commuting:
  - Cars off road, work from home, etc.
  - Improved mass transportation options
- Codifying application rates
- Truth in labeling laws for deicing chemicals
• Ending bare pavement policies

Like any policy, these must be approached with great consideration and strategy. Policy without adequate preparation could alienate partners or rate payers. A good example of the challenge of policy is the establishment of minimum softener efficiencies. Several stakeholders, including some softener companies, have suggested that the district mandate minimum softener efficiencies in our area.

This policy would be feasible, but would need to be implemented to reflect technological nuances. Through work with softener companies on grant projects and educational materials, the district has learned that there is more to softener efficiency than their design. Softeners must be configured and maintained properly to operate at their highest efficiency, and different efficiencies are required to attain desired chloride concentration in different conditions. Moreover, a less efficient softener that softens only a portion of the water in a building can achieve the same desired outcomes as far as chloride concentration as a high-efficiency softener that softens all the water in the building. This example demonstrates some of the nuances associated with many chloride-related issues that would need to be carefully considered in policy development.

b. Monetary Incentives

Incentives in forms such as grants, rebates, and pass-through funding have been used in the district’s chloride program. These were first tested as pilots in 2014 and strategically used in the chloride program since. The district has funded projects to reduce both water softener salt and road salt.

The district has administered softener salt reduction incentives throughout the first permit term, primarily for commercial softener improvements or changes to business practices at water softener companies that favor high-efficiency softener installations. Detailed descriptions of the evolution of these funding programs are found in ATTACHMENT D- Summary of Chloride Incentives 2015-18.

Although offering funding for chloride reduction has been helpful in engaging with local businesses and spurring softener projects, incentives have limitations. Money is not always the motivator or barrier to behavior change, and even if it is, deploying funding strategically can be a challenge. For example, offering homeowner incentives has been a recurring suggestion for the district’s chloride programs. On its face, this approach is straightforward. But further considerations of this approach and experiences with pilot projects have indicated that this approach is more complex than it would initially seem. There are still questions of individual motivation, appropriate incentive amounts, efficient administration, and the net value to the district of focusing time and money on relatively small chloride reductions. (District funding programs for commercial-sized softeners have generated chloride reductions at about a third of the cost per pound of home-sized softeners.) District staff will continue exploring answers to these questions in an effort to create workable homeowner softener improvement programs. Moving forward, the district will continue to focus on larger salt users and engaging representative “umbrella” organizations that can spur more widespread change.

C. Education and Engagement

At the beginning of the district’s first variance period, chloride was not well-known as a pollutant in this area among the general public. In the district’s experiences educating the public and specific sectors, audiences have expressed surprise when they learn about the extent of chloride pollution and its sources. For example, plant visitors on tours are often taken aback by the fact that water softeners are the largest source of chloride to wastewater – often the guess is road salt or food seasoning. Additionally, many road salt...
applicators have been amazed by the recommended salt application rates compared to the rates they had been using.

The district made progress in chloride education in its first variance term. A radio ad, presentations, trainings, tours, sector surveys, social media, press releases, print material and targeted meetings have disseminated information about chloride to varied audiences. The district has seen local entities take action to reduce chloride as a direct result of our outreach. For example, Henry Vilas Zoo installed a saltwater storage and reuse structure after multiple conversations with the district about chloride reduction.

However, one of the core principles of behavior change theory is that education does not equal action. Some people may take action just by knowing about an issue, but many others need removal of personal or structural barriers to achieve a desired action. In the case of water softeners, education is in demand, but there is not a simple message for individuals to reduce their home salt use due to the complexity of water softeners and the variation of equipment between manufacturers. The district has distributed chloride reduction informational materials in some communities (e.g., we provided alt reduction bill stuffers for distribution in the communities like the City of Fitchburg and Town of Pleasant Springs), but the effect of this information, if any, is unknown.

Going forward, the goal for chloride-related education is to identify an “easy button” for homeowners, facilitated through simpler equipment or more certified professionals who can increase softener efficiency. With the right expertise and program infrastructure, the district can provide homeowners with a specific, straightforward requested action for softener improvement. Taking an in-depth look at the attitudes, behaviors and barriers for individual homeowners will be an insightful next step to refine key messages for homeowners.

In the meantime, education about road salt has generally been more straightforward and amplified by community partners. The Wisconsin Salt Wise partnership’s primary focus is education, and this group has developed simple messages and talking points for various audiences.

d. Training

Hosting training classes has been an effective strategy for district staff to promote chloride reductions when knowledge is a barrier to source reduction. Workshops, classes, seminars have been organized for specific audiences and purposes for both road salt and softener salt sources.

As a founding member of the Wisconsin Salt Wise Partnership, the district helped bring a well-established training program on proper road salt application from Minnesota to Wisconsin. Details on the evolution and current status of local Winter Maintenance Training and Salt Certification are found in ATTACHMENT A - Road Salt Source Reduction Measures. Partners continue to bring training to the region and expand it to different audiences. The City of Madison evolved the training into a Certification Program in 2017.

While an existing training was available for road salt management practices, to the district’s knowledge there was no analogous training for softening best management practices. To educate local facility managers and softener service providers about the chloride issue and softener salt reduction, the district designed and implemented softener salt reduction training sessions, which have occurred each year since 2016. Softener trainings are described in ATTACHMENT B - Water Softener Source Reduction Measures.
These trainings have generally been well-received and are good opportunities to bring attention to the district’s chloride reduction efforts and relevant available resources for businesses. Currently, the district is working to tailor training content to specific stakeholders to give them the information that they need to overcome barriers and achieve salt reduction. An example of targeted training is the new water softener optimization technical training in development for 2019, detailed in ATTACHMENT B - Water Softener Source Reduction Measures.

e. Partnerships and relationship building

The district’s chloride reduction efforts have benefited from partnerships formed with local stakeholders. Chloride reduction is a community-wide issue and will accordingly take community-wide action. Engaging stakeholders with established constituencies and various skill sets have helped the district elevate the chloride issue in the community and expand the reach – and therefore the impact – of the district’s chloride messages and goals.

The Wisconsin Salt Wise partnership is representative of a collaboration that has helped advance the district’s objectives. District staff convened this partnership, which consists of representatives of local water quality, transportation and public health agencies, in 2013. Other member groups, such as the Madison Water Utility, are also affected by excessive chloride, so collaboration is a natural fit. Together, this group has developed and disseminated messages related to road salt reduction and supported local initiatives that encourage proper salt use, such as road salt applicator trainings. Members of this partnership have performed activities that the district could have done on its own to reduce chloride, such as engaging watershed groups and maintaining the Wisconsin Salt Wise website, but would have taken much more time and effort on the part of district staff. Attachment C, Who Is Salt Wise, contains more information on this partnership.

Similarly, the district has worked on the water softener side to cultivate relationships with local businesses and industry groups to reach their membership or customers and to build trust in potentially fraught situations. There are tens of thousands of water softeners in the MMSD service area, and it would be infeasible for the district to directly approach every property owner to facilitate a softener improvement. Even working with individual commercial users on rebate projects has taken many district staff hours communicating with funding applicants and recipients, analyzing their reports, and troubleshooting projects. As with road salt, the district has found that it is more constructive and less demanding of staff time to make mutually beneficial partnerships with local businesses and professional organizations to spur salt reduction action among their staff and constituents.

One of the most important relationships the district has cultivated in its chloride program is with local water softener dealers. Reducing water softener salt and the overall use of water softeners is in conflict with these companies’ business models, so there was potential for adversarial scenarios to arise. District staff showed foresight by reaching out to these companies early in the chloride reduction program and helping them understand the district’s chloride predicament. These companies have been willing, cooperative partners. Experts from these companies helped the district develop water softening best management practices (BMPs) and have continued advising the district on technical aspects of softening, such as content for training sessions. They have also been instrumental in reaching the district’s target audiences, particularly homeowners. Some companies have incorporated chloride reduction messaging into their marketing communication (for example, see these examples from Culligan Total Water and Hellenbrand), and have communicated with their customers about the importance of efficient softening. As in Wisconsin Salt Wise,
these partnerships have resulted in chloride reduction messages reaching partners’ built-in constituencies and translated into chloride reduction without individual interventions by the district.

Looking ahead, the district plans to continue building strategic partnerships that will leverage others’ expertise, resources, and status as trusted messengers to key audiences. One such growing relationship is with area builders. Several district employees have been meeting with builders and their softener suppliers with a goal of encouraging more efficient softening practices in new construction.

f. Communications
A key component of the chloride source reduction program is communications. The district developed a website, mailings, a radio advertisement, brochures, posters, case studies and direct communication with customer communities. We have provided training programs, presentations, meetings and tabled at various events. With the addition of a communications manager in 2017, the district has additional capacity to disseminate information through media. Since 2017, the district has published three press releases that include information about chloride reduction initiatives.

The limitation of traditional media is the difficulty in tracking actions that may occur as a result of press. We have no way of knowing whether end users take action based on exposure to general media. However, we believe that there is value in this type of communication in raising the profile of the chloride issue among the community and local leaders, and in creating and maintaining momentum around this issue. To date, the most success communications initiatives have been sharing learnings (case studies and other success stories). Broad reaching strategies generate interest from local publications and community members, while direct interactions have resulted in the most known projects.

g. Reducing New Contributions

Research and Innovation
Innovation on water conditioning technology is important for maintaining chloride reduction into the future. As water conservation continues, and the region grows, the status quo of water softening through the use of sodium chloride may not be sustainable. As measures are taken to optimize softeners and make more efficient use of resources, we need to also be thinking about supporting research into salt-free alternative technologies (for both clearing pavements and water conditioning).

In its first permit term, the district conducted or supported a number of efforts to research chloride contributors and potential solutions, as well as encouraged innovation among relevant stakeholder groups.

Optimization study
With the support of various organizations, the district conducted a research project in 2014 to assess the impacts of home softeners on chloride loads to the plant, as well as the potential for chloride load reduction through home softener improvements. This study is described in ATTACHMENT B - Water Softener Source Reduction Measures.

This study resulted in some important lessons that have informed the district’s chloride reduction strategy, including:

• Water softener optimization or replacement typically reduces chloride to the sewer. The small sample size from the optimization study found that a softener optimization could
reduce chloride by 27 percent, and a replacement with a new softener could reduce chloride by 47 percent.

- Cost is not necessarily the barrier to home softener improvements. Less than half of the residents in each control area accepted a free softener optimization or replacement.
- Focusing solely on home softeners would be relatively expensive and would not meet the district’s chloride reduction target. Reductions from larger softeners in commercial facilities and multi-family residences will be a crucial part of the district’s chloride reduction strategy.

**Special sampling**

Source identification efforts have continued since the AECOM study to refine understanding of the types and locations of chloride contributions to the collection system. The district has collected conductivity data to indicate approximate chloride levels at pump stations. At the plant, the district has also analyzed samples from each influent line during winter months in an attempt to identify areas of the collection system with higher chloride loadings. The district plans to continue special sampling to supplement its influent data and monitor for trends that may indicate specific sources of chloride that the district can target.

**Alternative technologies**

The emergence of a technology that conditions water without the use of chloride salts would be revolutionary for long-term chloride compliance. However, technological and regulatory barriers currently limit the use of softener alternatives in the district service area. For single-family homes, no salt-free devices have been approved by the state for use in Wisconsin. Although such devices are in use in other states and other areas of the world, no technology has successfully demonstrated that it meets Wisconsin’s scale removal standards.

However, there is no such restriction on salt-free technologies in non-residential settings, so the district has discussed these technologies with local businesses and supported their installations. Meriter Hospital voluntarily installed a “Green Machine” device for its cooling towers in 2011 that replaced the use of softened water in the towers. The hospital also received a district salt reduction grant to eliminate the use of a water softener through the use of other water conditioning chemicals.

The district has also communicated with companies offering new technologies related to salt reduction, and funded the installation of some of these technologies. Many companies that sell salt-free devices have contacted the district about their products. The district has been receptive to these companies, but has exercised caution given the relatively untested nature of these products.

Still, due to their potential to permanently eliminate chloride discharges to the sewer from water conditioning, the district is willing to support research and policy efforts to overcome barriers to alternative technologies. The chloride reduction innovation grants may be used for research that explores the feasibility of new technologies or fixtures that permit reduced or no salt use.

**Work with builders and industry representatives**

Innovation in chloride use does not need to be only technological. The district is also encouraging key partners to innovate in their business practices and change standard practices related to salt use. For example, the district has met with representatives of the builders’ association and major building
firms in the Madison area to explain the implications of the chloride issue and the role that builders can play in solving it.

Historically, builders have installed lower-cost, less efficient water softeners, without an awareness of the importance of higher-efficiency units to keeping chloride at sustainable levels. Standard practices in building have also shifted to softening all water used in a building, not only the hot water. Inefficient softeners, softening all water and unchanged factory settings are contributors to elevated chloride levels at the plant.

The district has been addressing the challenge of this status quo on several levels, working with both softener wholesalers and building companies to convince them of the importance of more efficiency softening. In general, softener companies and builders’ groups have been receptive to the district’s requests, with several softener companies receiving grants from the district to jumpstart their transition to higher-efficiency softener installations. New and updated specifications and best management practices for water treatment systems have been developed by Wisconsin’s Department of Administration and other engineering and architecture firms. Meanwhile, builders’ groups have expressed willingness to change their softener practices and have communicated with district staff about potential projects that could be implemented in new construction. The district will continue working with these crucial sectors to prevent chloride reductions from being negated by new chloride contributions in the future.

Current Status

While progress has been made during the first variance term, additional reductions in chloride mass are required for NSWTP’s effluent to reliably remain below the water quality based effluent limit. Therefore, a second variance has been requested in the district’s pending permit. If this variance is granted, the district will have an additional five years to put in place source reduction measures aimed at compliance with the WQBEL.

Figure 10: Mass of Chloride in MMSD Effluent 1991-2018
The graphs below demonstrate trends in chloride levels at the treatment plant (Figure 10, Figure 11). The first graph shows the total annual chloride load to the treatment plant. The second graph shows the weekly average chloride concentration at the plant in 2018 compared to the 5-year average of the chloride concentration for the same week of the year.

Figure 11: Concentration of Chloride in MMSD Effluent 2018 compared to 5-year average

While these graphs generally indicate encouraging results, it is important not to draw definitive conclusions from this data. There are variables at play that may mask the effect of chloride reduction or, conversely, make chloride reduction seem more pronounced than it actually is. The major confounding variables are weather and new contributions.

Influent chloride from road salt is highly dependent on the timing, intensity and conditions of weather events. As described in ATTACHMENT A - Road Salt Source Reduction Measures, an intense melt event following a snowy winter could result in a pronounced spike in chloride concentration at the plant. Depending on where the district is in its seven-day averaging period for chloride, a sustained period of chloride-rich inflow and infiltration could cause an exceedance of the weekly average target.

Another competing factor is new contributions to the sewer system. One specific area of concern is new development and the associated new chloride contributions. Based on the district’s softener optimization study, residential homes contribute an average of about half a pound of chloride to the sewer per day. According to data from the Wisconsin Builders’ Association, there were 9,400 new single-family home permits in Dane County from 2010-2018. Those new homes translate to approximately 4700 new pounds of chloride, per day, or 1.7 million new pounds per year. Although not all of these new homes are in the district’s service area, these numbers illustrate the importance of working to promote installation of efficient softeners in new development to prevent mitigation of chloride reduction efforts. The district’s industrial pretreatment program is working closely with industries to reduce chloride discharges and is working to minimize future contributions as well.

However, the district is encouraged by the results seen so far, particularly considering challenges posed by inflow/infiltration and new development. Despite additional contributions to the sewer system from new
buildings, the total influent chloride loads have leveled out over the course of the chloride reduction program, so the upward trend in chloride levels appears to have stalled. Some of this reduction can be attributed to the closure of the Kraft Heinz facility, which had been the largest source of chloride to the sewer system. But the district also has documented chloride reductions from funded projects, and we feel reasonably confident in attributing part of the slowdown of this trend to district activities.

The positive outcomes of the district’s chloride reduction actions go beyond quantified chloride reductions. Chloride reduction has been a catalyst for partnerships and initiatives that have built momentum each year of the program. For example, offering chloride reduction grants and hosting trainings have helped the district start conversations with key partners in the community, such as Epic, American Family Insurance, Barnes, the Bruce Company, and more. Businesses like these have become champions for salt reduction, and in turn have used their resources and messaging to advance chloride reduction projects. CUNA Mutual, a customer of the Bruce Company, specifically requested the salt applicator to minimize salt use on its campus, demonstrating how developing business partners can drive demand for desired salt use practices.

Meanwhile, we have seen softener companies change their norms throughout partnerships with the district, and Wisconsin Salt Wise has drawn attention from many interested parties around the state and region. The district still has work to do to consistently meet the 395 mg/L standard, but has shown success, learned lessons, educated partners local and regionally, built partnerships, and created momentum for chloride reduction that will carry into the next variance term. The following chloride workplan reflects the lessons and successes from the first variance term while also including ambitious objectives for changing norms around salt use.
Work Plan (2019-2024)

Based on the major takeaways from research and activities over the first variance term, the district’s work plan has evolved into a comprehensive strategy that targets all sources of chloride through a varied mix of approaches.

This work plan allows for flexibility as new opportunities arise while maintaining momentum in areas that have shown success or promise.

<table>
<thead>
<tr>
<th>Action category</th>
<th>Specific actions</th>
<th>Timing/Frequency</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1. Evaluate audiences to determine best attendance groups</td>
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<tr>
<td>Education and Engagement</td>
<td>2. Determine continuing value from various attendees</td>
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<td></td>
<td>b. Winter Maintenance Training</td>
<td>Minimum of yearly</td>
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<tr>
<td></td>
<td>1. Partner with regional interested parties</td>
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<td></td>
<td>2. Work with City of Madison certification program</td>
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<td></td>
<td>3. Continue to focus on whole service area</td>
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<td></td>
<td>4. Evaluate value of different training (Level II)</td>
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<td></td>
<td>5. Follow-up survey of previous attendees to assess value</td>
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<td></td>
<td>c. Develop homeowner program to help them understand their softeners</td>
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<td></td>
<td>1. Update web resources</td>
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<td>2. Evaluate train the trainer program format</td>
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<td></td>
<td>3. Leverage partnerships: Office of Lakes &amp; Watersheds,</td>
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<td></td>
<td>Neighborhood assoc., home inspectors, builders, others</td>
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<tr>
<td>2) Continue to offer salt reduction rebate programs and expand program offerings</td>
<td>a. Continue commercial/industrial rebate program</td>
<td>Yearly</td>
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<td></td>
<td>b. Continue professional/innovation grant program</td>
<td>Yearly</td>
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<tr>
<td>Incentives</td>
<td>c. Evaluate new or expanded programs to target specific markets:</td>
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<td></td>
<td>• Wholesale market</td>
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<td>• Plumber market</td>
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<td></td>
<td>• Help customer communities administer own programs</td>
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<td></td>
<td>• Evaluate potential for research/innovation grant program (or competition) to encourage innovation</td>
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<tr>
<td>3) Simplify salt-reduction rebate programs (administration and quantification)</td>
<td>a. Evaluate rebate data</td>
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<td>• Evaluate reductions by type of intervention</td>
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<tr>
<td>Incentives</td>
<td>• Evaluate trends</td>
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<td>• Determine if additional research is needed</td>
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<td>b. Work to simplify application</td>
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<tr>
<td></td>
<td>• Engage users (and other interested parties) to determine barriers and opportunities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Work to simplify reporting process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Quantify reductions from various interventions</td>
<td></td>
</tr>
</tbody>
</table>
- Work with experts to determine how reductions occur (i.e., are they proportional to water use in some circumstances)

d. Use MMSD facilities and other methods to test reduction potential
   i. Evaluate significance of technology, barriers and opportunities
   ii. Use systems to answer research questions

| 4) Continue to offer road salt equipment grants | a. Target private and municipal operations throughout service area Yearly  

| Incentives | b. Incentivize salt-reducing innovations and develop leaders in the “new normal”  

| c. Measure change in winter maintenance policy & practices through follow-up to 2014 & 2015 surveys  

| 5) Quantifications/Data Mining | a. Analyze historic data to see if the impact of previous work is evident (industrial (Kraft/Heinz shows up in PS data, but can we break out other interventions)  

| Research and innovation | i. Understand historic baseline  

| ii. Understand historic peak loads  

| iii. Understand changes (variability, sensitivity to melt, etc.)  

| iv. Understand impact of continued development  

| b. Determine magnitude of previous reductions  

| c. Develop estimates of cost-per-pound and future viability of programs/reductions  

| d. Evaluate incentive/disincentive options  

| 6) Lay groundwork for future targeted homeowner salt reduction programs | a. Study existing sources of chloride, and gather information specifically for development of future outreach strategies.  

| b. Measure awareness and attitudes; collect information about barriers to homeowner action through scientific survey  

| c. Pilot direct engagement through a bill stuffer to Kegonsa Sanitary District.  

| Communications | • Test methods to quantify impact  

| d. Identify media/advertisement outlets and methods to evaluate effectiveness  

| • Social media, billboards, print, web, direct and other  

| 7) Cultivate relationships and leverage partnerships | a. Leverage existing social networks, including CED and Commission networks, to engage area business managers and policy makers  

| b. Build new relationships with hotels/apartments/industry with individual meetings and develop salt reduction opportunities.  

| Education and Engagement | c. Identify, develop and engage contacts with association-type groups.  

| d. Continue to facilitate conversations between salt reduction champions and their peers.  

<p>| 24 |</p>
<table>
<thead>
<tr>
<th><strong>Policy and Regulation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>e. Work to develop programs with Green Tier Builders and other sustainability-focused groups/initiatives.</td>
</tr>
<tr>
<td>f. Speak in venues where our messages can reach broad audiences:</td>
</tr>
<tr>
<td>- Chamber(s) of commerce</td>
</tr>
<tr>
<td>- Professional/trade organization meetings, conferences and/or trainings</td>
</tr>
<tr>
<td>- Determine other viable venues</td>
</tr>
<tr>
<td>a. Engage with others focusing on chloride reduction</td>
</tr>
<tr>
<td>i. Regional joint sustainability initiative (MMSD, MWU, CARPC)</td>
</tr>
<tr>
<td>ii. City of Madison’s road salt certification program</td>
</tr>
<tr>
<td>iii. Dane County’s application rates project</td>
</tr>
<tr>
<td>iv. Work with other Dane County wastewater treatment plants working on chloride reduction</td>
</tr>
<tr>
<td>v. Keep current on Waukesha, WI’s, SEWRPC’s, and David Strifling’s project</td>
</tr>
<tr>
<td>vi. Monitor progress in Minnesota, Iowa, Arizona, California and others focusing on salt/chloride/TDS reductions</td>
</tr>
<tr>
<td>o Leverage external learnings</td>
</tr>
<tr>
<td>o Evaluate programs and effectiveness</td>
</tr>
<tr>
<td>o Implement viable strategies</td>
</tr>
<tr>
<td>8) Behavior change</td>
</tr>
<tr>
<td>a. Develop programs to change behavior/social norms with businesses and individuals.</td>
</tr>
<tr>
<td>- Learn from other industries and programs</td>
</tr>
<tr>
<td>- Leverage partnerships and existing organizations</td>
</tr>
<tr>
<td>b. Leverage WI Salt Wise to change behavior and social norms</td>
</tr>
<tr>
<td>- Work with partners to set goals</td>
</tr>
<tr>
<td>- Determine how to quantify results</td>
</tr>
<tr>
<td>9) Sampling</td>
</tr>
<tr>
<td>a. Resampling of the PS9 user charge area for chloride</td>
</tr>
<tr>
<td>- Compare to previous data from 12 years ago 2017</td>
</tr>
<tr>
<td>b. Evaluate sampling data</td>
</tr>
<tr>
<td>i. User charge samples quarterly for chloride 2018</td>
</tr>
<tr>
<td>ii. Potentially expand industrial/commercial sub-basins (Goal: determine if there is enough variability to warrant analysis of a billing parameter for chloride)</td>
</tr>
<tr>
<td>iii. Continue winter PS sampling for chloride</td>
</tr>
<tr>
<td>iv. Evaluate and engage in other potential sampling</td>
</tr>
<tr>
<td>o Possible to add chloride as a billing parameter (in ways that would not credit leaky systems) Yearly Dec. - Apr.</td>
</tr>
<tr>
<td>10) Capitalize on low-hanging fruit</td>
</tr>
<tr>
<td>a. Develop outreach kit</td>
</tr>
<tr>
<td>- Work with MMSD’s communication department</td>
</tr>
<tr>
<td>- Develop press releases, articles, program ideas, mailers, etc.</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
</tr>
</tbody>
</table>
Future Direction

The district’s chloride source reduction program is showing success. Chloride concentrations have routinely fallen. The district is permitted for weekly average concentration. The water quality standard is 395 mg/l. The district is averaging fewer weeks above the water quality standard of 395 mg/l (Figure 12). While the program continues to show success, we should be cautious in interpreting the results because of annual variability due to road salt. Inconsistent loads contribute to the peaks that are seen in the district’s effluent. When the district looks to determine the goal upon which to judge success of the chloride reduction program, both the baseline and peak contributions need to be considered.

Figure 12 : Weekly average concentration comparisons

<table>
<thead>
<tr>
<th>Policy Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Determine district’s interests relating to various water quality targets.</td>
</tr>
<tr>
<td>b. Develop guidance for the use of policy and regulatory tools and assess their related timelines toward reaching our established targets.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Communications</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Develop and roll out videos/case studies</td>
</tr>
<tr>
<td>b. Develop and roll out industry/large water user focused messages</td>
</tr>
<tr>
<td>c. Targeted I&amp;E outreach to neighborhood associations</td>
</tr>
<tr>
<td>d. Targeted media outreach to area industry publicans &amp; newsletters</td>
</tr>
<tr>
<td>e. Develop messaging; strategy for household communications</td>
</tr>
</tbody>
</table>

- Pilot with City of Middleton
- Focus industrial contacts on chloride reduction opportunities
- Attend community events as appropriate, with emphasis on chloride information

Table:

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Conc</td>
<td>400</td>
<td>420</td>
<td>440</td>
<td>460</td>
<td>480</td>
<td>500</td>
<td>520</td>
<td>540</td>
<td>550</td>
</tr>
</tbody>
</table>

- Top 10 Weekly Avg Concentrations
- Weeks Exceeding 395 mg/l Chloride
To routinely meet the water quality standard, on average, approximately 5520 pounds per day of additional reduction are needed (Figure 13). For a scenario where baseline reduction was only needed, we could aim for 5500 pounds per day of reduction. Because of the variability throughout the year, statistically, that number comes with a standard deviation of over 4000 pounds per day. This variability is due to the peak loads, like road salt, and could cause the district to exceed its water quality standard even if we achieve the reduction needed that on average would put our effluent below the water quality standard.

**Figure 13 : Statistical comparison of “Reductions needed for Success”**

The district and its regulators will need to assess timelines as well as goals. Is the goal 100% compliance with the water quality standard? If so, the statistics show that nearly 20,000 pounds of reduction are still needed. Would the district and its regulators accept 95% confidence with routinely complying with the water quality standard? If so, the goal would be under 7000 additional pounds per day of reduction. If the district’s goal is to achieve compliance through behavior change and other longer-horizon approaches, then the actual goal could be significantly less pounds of reduction but could result in longer horizon of investment.

Even with concentrations averaging lower, development in the district service area is holding mass stable (Figure 14). Reductions in mass must reflect additions that are at or below the water quality standard concentration or the additions could outpace reductions.

**Figure 14 : Chloride mass over time**
Finally, as the district look at future reuse possibilities for effluent discharge, chloride is one of the major parameters to consider. If the district’s effluent was below the groundwater standard of 250 mg/l, there may be more opportunities for reuse. If it were below the chloride level in the local water bodies (Waubesa and Kegonsa are both above 60 mg/l), there would be a better chance that it could be returned to those bodies of water rather than pumped around them.

Many of the behavior-based practices and social norms changes that are being put in place now as part of the chloride source reduction program will continue to result in chloride reduction into the future, however the changes may or may not align with the immediacy of a 5-year permitting cycle. In summary, district investment in the chloride source reduction program will influence the speed of chloride reduction; compounding variables, such as growth and development may counter some of the reductions; changes in climate and the on-going variability of winter in Wisconsin will impact the chloride in the district’s effluent and the vision of ultimate success has both a quantifiable number and time component.

The district’s leadership is changing the way that chloride is viewed, used and discarded. This program’s success is leading an evolution in the industry. During the next variance term, the district will need to seriously consider the meaning of success and engage regulators in this dialog.
References


Madison Metropolitan Sewerage District. WPDES Permit. 2010. Available at: https://www.madsewer.org/Portals/0/Planning/PermitsAndOrdinances/2004%20WPDES%20Permit.pdf


ATTACHMENT A - Road Salt Source Reduction Measures

Road Salt Source Reduction - Background
Although Madison Metropolitan Sewerage District has a sanitary-only sewer system, inflow and infiltration of storm water and groundwater impact the daily and weekly average chloride concentration of influent to the Nine Springs Treatment Plant. In winter, lower average flows and dissolved road salt in inflow push the daily and weekly average chloride concentrations up at the plant during periods of melt following snow and ice storms. The impact of seasonality on influent chloride is thoroughly documented in the following letter.

Weather Impacts on Wastewater Treatment Plant Effluent Chloride Levels
See attached documents.
April 11, 2017

Ms. Amy Garbe
WDNR-Waukesha Service Center
141 NW Barstow (Room 180)
Waukesha, WI 53188

Subject: Potential Seasonal Interim Chloride Limits

Dear Ms. Garbe:

This letter is in response to your letter dated March 16, 2017 related to potential seasonal interim chloride limits that could be placed in the District’s WPDES permit when it is reissued. You asked that the District provide an explanation as to why the last year of data may not be representative of fluctuations that can be observed with chloride discharges, and to provide a submittal that includes a demonstration that an interim chloride limit of 430 mg/L cannot be met during the winter months. You specifically asked that the demonstration include the following information:

- A review of data looking at weekly averages over the course of the previous permit term through the present with respect to the target limit of 430 mg/L.
- A comparison of the most recent years (2016 and 2017) to the previous years and include information as to why the limit is being met now but has not been met in the past.
- A discussion on the impacts of road salt on the effluent and the need for seasonal limits.

Information related to each of the above points is provided in Attachment A. Note that the order in which they are addressed is different than the order presented above as doing so makes it easier to clearly demonstrate the need for a winter target value (winter is defined as November-March) that is higher than a summer target value (summer is defined as April-October).

The information in Attachment A provides a compelling case for seasonal interim effluent chloride limits in the District’s WPDES permit when it is reissued, with the winter season interim limit being higher than the summer season interim limit. Previous calculations by the Department indicate that a winter interim limit would be approximately 465 mg/L.

I want to assure you that the District will continue to aggressively implement its five year strategic plan to reduce chloride loads at the Nine Springs Wastewater Treatment Plant. A major focus of this effort is
to work with other entities to reduce the use of road salt in our service area. We have made significant progress in this area as evidenced by the Wisconsin Saltwise Campaign (www.wlsaltwise.com).

Please feel free to contact me if you have any questions regarding the attached information or wish to have further discussion related to seasonal interim chloride limits.

Sincerely,

David S. Taylor
Director of Ecosystem Services

CC: Robin Nyffeler-WDNR (email)
    Rachel Fritz-WDNR (email)
    Diane Figiel-WDNR (email)
Attachment A

1) Review of weekly average effluent chloride concentrations over the period of 10/1/2010 through 03/28/2017.

Weekly average effluent chloride concentrations for the above reporting period are presented Figure 1. Corresponding weekly average flow values are also shown for context, as is a 430 mg/L target limit. For the purpose of developing seasonal chloride limits, the Department typically considers the winter season as November through March, and the summer season as April through October.

A closer review of the data reveals several general trends:

- Effluent flow (mgd) and effluent chloride concentration (mg/L) have an inverse relationship. The correlation coefficient for the weekly average flow and concentration values is approximately -0.61, which for this type of data is considered a moderate/strong relationship.
- Effluent concentrations vary by season. A detailed breakdown on showing seasonal differences is provided in Table 1. For the reporting period, the average winter season effluent chloride concentration is notably higher (26 mg/L) than the average summer effluent chloride concentration. The trend in seasonal differences is expected to continue.
- There have been 44 instances where the weekly average effluent chloride concentration has been higher than 430 mg/L (see Figure 2). Of those, 43 or approximately 98% have occurred during the winter season.
- The weekly average effluent concentration in the winter season is inversely related to flow, with a moderate correlation coefficient of -0.48. During the summer season, flow and effluent concentrations are also inversely related, with a stronger correlation coefficient of -0.69.
- When the weekly average effluent concentrations are rolled up by season, the correlations between flow and concentration are stronger: -0.78 and -0.84 for the winter and summer seasons respectively.

Figure 1: Nine Springs Weekly Average Effluent Flow and Chloride Concentration
Figure 2: Weekly Average Effluent Chloride Concentrations
(# of Values > 430 mg/L for the Reporting Period of Oct 1, 2010 to Feb 28, 2017)

Table 1: Weekly Average Effluent Chloride Concentrations Rolled Up By Season

<table>
<thead>
<tr>
<th>Winter</th>
<th>Ave Flow (mgd)</th>
<th>Ave Conc. (mg/l)</th>
<th>Summer</th>
<th>Ave Flow (mgd)</th>
<th>Ave Conc. (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/1/2011 - 3/28/2012</td>
<td>37.8</td>
<td>408</td>
<td>4/1/2012 - 10/28/2012</td>
<td>37.5</td>
<td>408</td>
</tr>
<tr>
<td>11/1/2012 - 3/28/2013</td>
<td>37.3</td>
<td>433</td>
<td>4/1/2013 - 10/28/2013</td>
<td>45.2</td>
<td>378</td>
</tr>
<tr>
<td>11/1/2016 - 3/28/2017</td>
<td>42.3</td>
<td>387</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average of all Winters</strong></td>
<td><strong>39.5</strong></td>
<td><strong>416</strong></td>
<td><strong>Average of all Summers</strong></td>
<td><strong>41.7</strong></td>
<td><strong>391</strong></td>
</tr>
</tbody>
</table>
2) Impacts of Road Salt on Effluent Chloride Concentrations

A study conducted for the District by AECOM identified source loadings of chloride to the Nine Springs Wastewater Treatment Plant and the relative contributions of each source category. Contributions, quantified as annual averages, are shown in Table 2.

### Table 2

**Summary of NSWTP Annual Average Wastewater Chloride Contributions**

<table>
<thead>
<tr>
<th>Chloride Source</th>
<th>Annual Average Chloride Mass (lbs/day)</th>
<th>Annual Average Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background from potable water supply wells</td>
<td>11,491</td>
<td>8 %</td>
</tr>
<tr>
<td>Typical contribution from domestic wastewater</td>
<td>11,829</td>
<td>8 %</td>
</tr>
<tr>
<td>Zeolite water softener contribution</td>
<td>80,500</td>
<td>57 %</td>
</tr>
<tr>
<td>Industrial Input</td>
<td>25,000</td>
<td>18 %</td>
</tr>
<tr>
<td>NSWTP chemicals, septage and hauled waste</td>
<td>3,138</td>
<td>2 %</td>
</tr>
<tr>
<td>Road de-icing</td>
<td>10,000</td>
<td>7 %</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>141,958</strong></td>
<td><strong>100 %</strong></td>
</tr>
</tbody>
</table>

Chloride from road de-icing accounts for 7% of the chloride load at the wastewater treatment plant on an annual average. Chloride from de-icing events enters the wastewater collection/conveyance system though infiltration and inflow. De-icing activities are seasonal, with the majority of activity occurring during the winter season (previously defined as November-March). Table 3 provides some historical information on the use of road salt and is shown simply to emphasize that a large amount of salt is used in the Madison area and that the amount varies from year to year. The totals in Table 3 do not include salt used by private applicators, homeowners, other municipal entities, etc.

### Table 3

<table>
<thead>
<tr>
<th>Season</th>
<th>Madison</th>
<th>Dane County</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997-1998</td>
<td>7,857</td>
<td>23,769</td>
</tr>
<tr>
<td>1998-1999</td>
<td>7,328</td>
<td>16,541</td>
</tr>
<tr>
<td>1999-2000</td>
<td>8,448</td>
<td>20,254</td>
</tr>
<tr>
<td>2000-2001</td>
<td>13,267</td>
<td>24,964</td>
</tr>
<tr>
<td>2001-2002</td>
<td>6,655</td>
<td>14,961</td>
</tr>
<tr>
<td>2002-2003</td>
<td>9,326</td>
<td>17,263</td>
</tr>
<tr>
<td>2003-2004</td>
<td>8,344</td>
<td>20,824</td>
</tr>
<tr>
<td>2004-2005</td>
<td>12,440</td>
<td>27,452</td>
</tr>
<tr>
<td>2005-2006</td>
<td>10,057</td>
<td>26,314</td>
</tr>
<tr>
<td>2006-2007</td>
<td>11,486</td>
<td>27,171</td>
</tr>
<tr>
<td>2007-2008</td>
<td>19,556</td>
<td>43,773</td>
</tr>
<tr>
<td>2008-2009</td>
<td>10,889</td>
<td>43,643</td>
</tr>
<tr>
<td>2009-2010</td>
<td>11,450</td>
<td>36,313</td>
</tr>
<tr>
<td>2010-2011</td>
<td>14,809</td>
<td>46,706</td>
</tr>
<tr>
<td>2011-2012</td>
<td>8,156</td>
<td>25,469</td>
</tr>
<tr>
<td>2012-2013</td>
<td>16,359</td>
<td>50,488</td>
</tr>
<tr>
<td>2013-2014</td>
<td>14,756</td>
<td>53,531</td>
</tr>
<tr>
<td>2014-2015</td>
<td>8,209</td>
<td>29,554</td>
</tr>
</tbody>
</table>
While exact measurements of the road salt contribution to the District’s effluent chloride mass load during the winter months cannot be made, a reasonable assumption is that road salt contributions are significantly higher than 7% of the total chloride load in the winter seasons and significantly lower than 7% during the summer seasons.

USGS stormwater monitoring at the Spring Harbor stormwater outfall is useful for illustrating the potential impact that road salting can have on effluent quality through infiltration and inflow of stormwater/melt water to the sanitary sewer. USGS has been measuring conductivity in stormwater discharges at the Spring Harbor stormwater outfall since February, 2014 as part of an effort to develop a better understanding of the impact of road salting activities on surface water quality. USGS uses conductivity as a surrogate for chloride and estimates the chloride concentration through a statistical relationship that they developed between conductivity and chloride through paired sampling of stormwater from this outfall.

Figure 3 shows the calculated chloride concentrations for stormwater at the Spring Harbor outfall for the period of February 2014 through September 30, 2016 (the end of the 2016 water year). Summary statistics are presented in the Table 4. The average and maximum daily chloride values during the winter season are approximately 1.3 and 15 times higher respectively than the highest weekly average effluent concentration reported by the District for the period of October 1, 2010 through March 28, 2017.
### Table 4: Summary Statistics for Calculated Chloride Concentrations at the Spring Harbor Stormwater Outfall

<table>
<thead>
<tr>
<th></th>
<th>Winter Seasons</th>
<th>Summer Seasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>623 mg/L</td>
<td>160 mg/L</td>
</tr>
<tr>
<td>Median</td>
<td>355 mg/L</td>
<td>136 mg/L</td>
</tr>
<tr>
<td>Maximum Day</td>
<td>7,360 mg/L</td>
<td>1,260 mg/L</td>
</tr>
</tbody>
</table>

3) Variability between winters

As previously discussed, there is a demonstrable difference in effluent chloride concentrations between the winter and summer seasons, with winter concentrations being higher than summer concentrations. There are also significant differences between winters.

As previously noted, there have been 44 instances during the period of October 1, 2010 to present where the weekly average effluent chloride concentration has been greater than 430 mg/L. Of those, 43 occurred during the winter season, with the distribution by winter season shown in Table 5.

### Table 5

<table>
<thead>
<tr>
<th>Winter Season</th>
<th># of weekly chloride values &gt; 430 mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-2011</td>
<td>3</td>
</tr>
<tr>
<td>2011-2012</td>
<td>3</td>
</tr>
<tr>
<td>2012-2013</td>
<td>11</td>
</tr>
<tr>
<td>2013-2014</td>
<td>13</td>
</tr>
<tr>
<td>2014-2015</td>
<td>12</td>
</tr>
<tr>
<td>2015-2016</td>
<td>0</td>
</tr>
<tr>
<td>2016-2017</td>
<td>1</td>
</tr>
</tbody>
</table>

Winter weather in Wisconsin is extremely variable, as are the impacts that weather has on road salt use, and ultimately the impact that road salt can have on effluent quality. We know that no one weather factor alone (like total amount of snowfall, precipitation, temperature) drives application of road salt or the subsequent runoff/melt events which cause peaking loads of chloride in District effluent. Rather, it is a combination of many factors including timing of the snowfall/precipitation event(s), frequency, intensity and other conditions surrounding snowfall/precipitation event(s).
Simply put, it is impossible to use one winter, like the winter of 2015-16 to predict what future conditions may be and the resulting impact on effluent quality. Summary information from the previous seven winter seasons is provided in Table 6. A quick review of the summary information from the previous seven winters (see Table 6) demonstrates this fact.

Table 6: Summary Weather and Chloride Information For Winter Seasons

<table>
<thead>
<tr>
<th>Winter Season</th>
<th>Total Rainfall (inches)</th>
<th>Total Snowfall (inches)</th>
<th># of Large Snow Events</th>
<th># of Snow Events</th>
<th>Days With Ave Temp &gt; 32</th>
<th>Ave Effluent Flow (mgd)</th>
<th>Ave Cl Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-2011</td>
<td>8.41</td>
<td>71.1</td>
<td>5</td>
<td>44</td>
<td>43</td>
<td>42.3</td>
<td>411</td>
</tr>
<tr>
<td>2011-2012</td>
<td>9.84</td>
<td>31.4</td>
<td>2</td>
<td>27</td>
<td>77</td>
<td>37.8</td>
<td>408</td>
</tr>
<tr>
<td>2012-2013</td>
<td>11.18</td>
<td>70.3</td>
<td>3</td>
<td>40</td>
<td>46</td>
<td>37.3</td>
<td>433</td>
</tr>
<tr>
<td>2013-2014</td>
<td>6.97</td>
<td>58.2</td>
<td>1</td>
<td>47</td>
<td>35</td>
<td>38.7</td>
<td>436</td>
</tr>
<tr>
<td>2014-2015</td>
<td>4.45</td>
<td>33.5</td>
<td>2</td>
<td>30</td>
<td>45</td>
<td>36.8</td>
<td>439</td>
</tr>
<tr>
<td>2015-2016</td>
<td>12.65</td>
<td>28.5</td>
<td>1</td>
<td>27</td>
<td>81</td>
<td>41.1</td>
<td>401</td>
</tr>
<tr>
<td>2016-2017</td>
<td>9.64</td>
<td>44.0</td>
<td>2</td>
<td>24</td>
<td>63</td>
<td>42.3</td>
<td>387</td>
</tr>
</tbody>
</table>

*large snow event defined as snowfall of ≥4.5" in one day*

The winters of 2015-2016 and 2016-2017 (the most recent winter seasons) had the lowest number of weekly average chloride concentrations that were greater than 430 mg/L. Road salt use for these winters is not currently available. These winters were comparatively mild with respect to temperature and the amount of snowfall, and had relatively high amounts of rainfall. They also had a high number of days where the average temperature was above 32 degrees F. Effluent volumes were relatively high and it is reasonable to assume that the more frequent rains and higher volume of rainfall had a dilution effect on any chloride from chloride going to the sanitary sewer. For the winter of 2015-2016, the Spring Harbor stormwater data (Figure 3) appears to support this conclusion.

By contrast, the winters of 2012-2013, 2013-2014 and 2014-2015 had the highest number of weekly average chloride concentrations that were greater than 430 mg/L. The first two winters had very high road salt usage, while the winter of 2014-2015 had relatively low road salt usage (see Table 3). The average effluent chloride concentration in all three winters was similar. Note that the winter of 2012-2013 had a rainfall volume similar to that during the winter of 2015-2016, yet the effluent chloride concentration was significantly higher in 2012-2013. A severe drought impacted much of Wisconsin in the summer of 2012 and it likely mitigated the impact that rain had on effluent chloride concentration during the winter of 2012-2013.

Additional comparisons can be made to demonstrate that past winter effluent chloride concentrations can not be used to predict future winter effluent chloride conditions, given the multitude of factors that influence winter chloride levels. The District notes that if past effluent chloride concentrations were a good predictor of future effluent chloride concentrations, the winters of 2012-2013, 2013-2014 and 2014-2015 should have had a low number of weekly average chloride concentrations greater than 430 mg/L. Instead, these winters were the three highest winters in terms of the number of weekly average chloride concentrations greater than 430 mg/L.
Road Salt Source Reduction - Evolution of Strategies

*Behavior Change Efforts*

Public Health Madison & Dane County (PHMDC) annually releases a [road salt report](#) that documents trends and research related to road salt application in Dane County. These reports, the inclusion of local waters on the 303d impaired list, and research produced by University of Wisconsin scientists all point to increasing chloride concentrations in local waterways. Continuous conductivity monitoring conducted by USGS has identified road-salt-laden snowmelt water as a contributor to significant spikes in chloride entering surface waters.

The overuse of road salt doesn’t just impact NSWTP. All area waters, including lakes, rivers, streams, wetlands, and groundwater are experiencing rising chloride. As a result, multiple entities in the Madison area have an interest in curtailing road salt use. In 2013, partners including the district, Madison Water Utility, PHMDC, Capital Area Regional Planning Commission, the Dane County Office of Lakes & Watersheds, the Madison Municipal Area Storm Water Partnership and UW Madison EH&S came together as the [Wisconsin Salt Wise Partnership](#). This partnership sought to identify opportunities to change social norms related to winter salt use. The partnership kicked off their effort by pooling resources to work with a communications firm to identify various barriers to reducing road salt use and develop messaging for target audiences (homeowners, drivers, municipal leaders, public works/EMS staff, winter maintenance professionals).

An ongoing major effort of the partnership is education, both general and targeted. Education to a general audience focuses on raising awareness of salt pollution causes and effects so residents can both change their individual actions and demand change. Targeted education provides resources that support taking actions that curb the amount of salt pollution in area waters. Since 2013, the district and other WI Salt Wise partners have funded and hosted training classes that provide winter maintenance professionals the knowledge and tools to use best management practices that reduce the use of road salt. The original classes from 2013 to 2017 were based on [Minnesota's Smart Salt Training Level I](#). These classes shift the paradigm on salt application from an informal, eyeballed approach to scientifically driven, technology based application rates.

Training attendance has grown year after year. For the district, this means that each year, more customer communities have sent crews to training and are working to improve their operations in terms of reducing salt use and adopting more winter maintenance BMPs (see Figure 15). For the region as a whole, the classes are slowly changing the norm for the whole winter maintenance industry in the area. The training classes continue to be in very high demand (generally over-subscribing or selling out each time), for both private and public sector employees. Success of training classes and WI Salt Wise’s outreach are evident in the industry leaders they have cultivated here in Madison.

*Figure 15: MMSD Customers Attending Training 2015-2017*
In 2017, Dane County and the City of Madison both took steps that took the work started by the WI Salt Wise Partners to the next level. The County coordinated development of a local training supplement and local application rate guidelines, which set goals for all salt applicators in the county, and the City of Madison, with support from the mayor, began a Salt Certification program. The Salt Certification Program and Application Rates Guidelines both set a high bar for applicators while empowering residents and businesses to “be Salt Wise” in their hiring decisions.

**Technical & Financial Assistance**

A large part of the behavior change work being done by WI Salt Wise and MMSD is identifying barriers to change, and then addressing those barriers with appropriate mechanisms to overcome or mitigate them. For road salt applicators, post-training survey evaluations from 2013-2015 identified the cost of new equipment or limitations with old, existing equipment as one major barrier to making improvements. Almost half of all class attendees cited lack of proper equipment as a barrier to using new, salt-reducing practices. In addition to the post-class survey results showing a cost barrier to reducing salt application, the class organizers and WI Salt Wise partners saw a need to develop local experts and create case studies on the new equipment.

Following those early classes, many attendees were curious about new equipment and had a great enthusiasm to try it, but because of their business models and uncertainties, they could not justify going out on a limb without a support network. MMSD developed the Road Salt Reduction Grant program to address both of these challenges. The program offers a 50% match on the cost of equipment that will optimize salt use. As of fall 2018, a total of 14 grants have been awarded. Each of these grants have not only demonstrated salt reduction as a result of new tool usage, but have also built up a series of success stories and a network of engaged applicators who are changing the expectation of what is standard operating procedure for their industry.

In addition to support for trying new practices and equipment, salt-reducing actions promoted through the Effective Winter Maintenance Training courses have also been supported by calibration trainings supported by the Madison Municipal Stormwater Partnership.
Road Salt Source Reduction - Current Status & Next Steps

The work that MMSD and WI Salt Wise partners have already done has built substantial capacity and spurred action. Now is a critical time to sustain that momentum by formalizing support structures and ensuring continuity. With a local salt certification and training program just getting off the ground, outreach to the public to change attitudes, awareness and expectations are needed more than ever.

One of the biggest identified barriers to ending the overuse of rock salt (both locally and nationally) that remains unaddressed is liability protection. Salt applicators are fearful of reducing their salt use to scientifically established standards because of slip and fall liability. What looks like a “normal” amount of salt is often more than what’s actually needed, but applicators’ customers have grown to equate excessive salt with safer surfaces. Salt applicators do not doubt the effectiveness of recommended salt application rates, but fear that following recommended application rates leaves them open to lawsuits for negligence. The City of Madison-led salt certification program and the Dane County-led group of applicators who developed the Wisconsin application rates are a step toward a potential future liability protection program, but WI Salt Wise’s work is still needed to shift the norms and expectations behind applicators’ liability apprehensions, as well as to explore possible avenues through which to promote liability protection rules.

We also anticipate and support additional research around chloride pathways and impacts in the built and natural environments. Increased attention to chloride has spurred new research projects and emerging information about the relationship between elevated levels of chloride in groundwater and increasing hardness of that water, the extent to which increased chloride concentrations impact aquatic life in the winter months, and previously unknown relationships between chloride and phosphorus in stormwater.

Finally, we are planning for a restructuring of the Wisconsin Salt Wise partnership to help the group function with a more defined vision. The partnership formed organically to address the pressing issue of road salt pollution. While this format worked well initially, increasing complexity of programs demands increased coordination and communication between the partners, demanding additional time and decisionmaking with no clear executive leader. The partnership is evaluating leadership of the partnership. With a permit driving the need for salt reduction, no other organization in the partnership is positioned quite the same way that MMSD is to continue involvement in the partnership. Next steps for this group include evaluating what it means to be a Salt Wise partner, what commitments and responsibilities partners have, and how the group can continue to be flexible enough to put efforts where they are most needed while increasing the speed with which decision making can happen.
Water Softener Source Reduction - Background
The drinking water in the Madison area is extremely hard, ranging from 14 grains per gallon to over 30 grains per gallon. Since water hardness (scale) can cause mechanical or aesthetic issues in water systems, water softeners have become ubiquitous in nearly all buildings in the MMSD service area. Water softeners work by swapping sodium ions for hardness ions, removing hardness from source water. However, they need to be replenished with more sodium ions from time to time, so salt is regularly added to water softeners to keep them functioning. When water softeners regenerate, they release chloride to the sewer system. Water softening is the largest source of chloride to NWSTP.

The district has taken a multifaceted approach to reducing chloride contributions from water softeners, using or evaluating strategies that include education, monetary incentives, and policy changes. The following section details how the district’s source reduction program has evolved to focus reduction efforts on certain areas of water softening and address different softening sources with their own unique challenges and barriers.

Water Softener Source Reduction - Evolution of Strategies
Engage Partners for Fact-Finding
Initially, the district engaged professionals in the water softening industry to learn more about their products and initiate necessary partnerships. Through this process, we sought to understand the opportunities and barriers to reducing this source of salt to the sewer system. These conversations revealed two major barriers to changes to softening norms: Lack of any industry best management practices (BMPs) for water softener product selection and install, and challenges in the way state softening specifications were used.

In 2011, the district brought together a coalition of softening industry experts together to develop an initial set of Best Management Practices (BMPs) for softener selection and installation. In addition, the Wisconsin Department of Administration (DOA) evaluated and revised their specifications for softening systems. Historically, the specifications were copied from project to project and did not reflect current understanding of optimized softening systems. The Wisconsin DOA, Bureau of Architecture & Engineering, and Division of Facility Development convened a team of professionals who were able to revise the specification. Since the suppliers were part of the development of the specification, they were immediately on board with its implementation. Many firms use the state specifications for work outside of state buildings, so this change has the potential to have a ripple effect. Engaging early with water softening companies and state agencies was a key foundational step for the chloride reduction program, and the knowledge and relationships built at that stage have yielded additional projects and opportunities throughout the program.

Determine Scope
As the district was building relationships with key stakeholders, it was also working to quantify the scale and scope of identifiable chloride sources. Anecdotally, it was widely known that water softening was pervasive in residential and commercial buildings in Madison, but the categories of softener salt sources, their extent, and their potentials for salt reduction were unknown. Revisions to the district’s Sewer Use Ordinance (4.7.2) in 2015 allowed the district to collect better information about chloride sources, including permitted industrial users and background well-water chloride concentration. A 2015 study, “Chloride Compliance Study Nine”
Springs Wastewater Treatment Plant,” used these known sources (industrial, “background” or source water contributions, WWTP chloride chemical use, and the fixed amount from human waste) to calculate the approximate overall chloride contribution to the treatment plant from ion-exchange water softeners. It was estimated that on average 80,500 of about 142,000 influent pounds of chloride were from water softeners.

The district recognized that any attempt to reduce chloride at the source required further segmentation of the softener category, as the options for reducing salt are different at different scales (i.e., home vs. commercial). To study the smaller, 1-2 unit home-sized softeners, MMSD partnered in a series of research projects to develop a baseline understanding of the chloride contribution and reduction potential of this sector. Evaluated factors included the number of softeners, age of softeners, the quantity and intensity of water softened, and salt reduction potential. As a metropolitan sewerage district with no direct relationships to individual rate payers, we worked with various municipal water utilities to gather data during those utilities’ smart meter installation programs. The Madison Water Utility’s 2012 survey estimated that over 95% of homes in their customer base have softeners. Another notable finding from this study was that nearly 40% were more than 11 years old. This is significant, considering that an important plumbing code change took place in 2000, prohibiting installation of new time-clock based water softeners, which are inefficient. MMSD also partnered with a broad coalition funders, including the Madison Water Utility, the Water Quality Research Foundation, Hellenbrand, Inc., Capital Water, Culligan Total Water, Fox Soft Water and the Salt Institute, to have an independent researcher produce the paper, titled “Optimization of Water Softeners for Reduced Influent Chloride.” The study estimated that on average, each house contributes about a half pound of salt per day to the wastewater stream, or about a quarter pound of chloride per day. These results were in line with estimates from informal softener studies conducted by MMSD staff, as well as the estimate from the Madison Water Utility Survey. This study also found that on average, an optimization of a softener to run at its most efficient results in a chloride reduction of 27%, and replacement of an old softener with a more efficient model resulted in a chloride reduction of 47%.

Given these approximate chloride reductions potentials and the estimated prevalence of home water softeners, the district estimates that even if every water softener in single-family residences were replaced, it would not result a great enough reduction in chloride to reliably achieve permit compliance. This finding strongly reiterated the point that the district must focus on other sectors of chloride contributors, including multi-family (3+ units) and commercial buildings.

Piloting based on Research Findings: Identifies need for Targeted Programs

Another key finding of the softener optimization study was the relative cost of optimization and replacement interventions. Softener optimization is typically a fraction of the cost of a new softener, so the district has explored ways to make optimizations attractive to homeowners as a lower-cost option for reducing chloride. The district piloted a residential optimization program in 2016 to test this approach.

Again partnering with local water quality companies, MMSD tested whether cost for optimization was a barrier to homeowners. The Tenney-Lapham Neighborhood, a residential area of Madison with about 900 residents, was the pilot area. Each address was targeted through email, mail, newsletter advertisement, and some residents received in-person contacts. In the program, residents were offered up to $75 toward the cost of a softener optimization, with water softener companies providing the service for free and billing the district for these services. After a three-month project period, 38 optimizations were completed. Given the
size of the neighborhood, this is low (>5%) response rate indicated that barriers beyond financial ones exist for homeowners to optimize their softeners – residents did not accept even a free softener tune-up, echoing resistance in the previous home softener study. Surveying individual households in 2019 will be an opportunity to learn more about actual barriers and attitudes.

As another home softening evaluation effort, the district also collected data from a pilot program that dealt with multi-family residential softeners. In this “mini grant” pilot with a local water quality company, the company tracked salt use at three multi-unit (8, 24, and 44 units) apartment buildings in Madison for a year. Those softeners were replaced with high efficiency units, and salt use was again tracked in the months following replacement. The replacements resulted in substantial salt savings of 40%, 66% and 72%. What’s more, the quantity of salt saved in these larger multi-family buildings was an order of magnitude higher than the fraction of a pound being reduced with each single-family home intervention. Because these projects also resulted in significant materials savings due to reduced need for salt, these projects could actually see a return on investment over time. This pilot showed results that by far surpassed the reduction potential findings for single-family home softeners at a much lower price. These results supported the district’s determination to make large softeners a priority.

Current Programs Begin to Take Shape

Coming off of these pilots, having gained more information about options, opportunities, and costs, it was apparent that different barriers to change, risks, and benefits for source reduction options existed for different sized softeners. Large softeners were indicated to have a greater overall chloride reduction for less per-unit cost to the district, therefore the district directed resources toward improving the efficiency of large softeners.

After testing a commercial and industrial incentive program in various forms in late 2015, the current Commercial & Industrial Salt Reduction Rebates came to be in 2016. This program was initially targeted at the largest water users in the district’s service area and to sectors within the commercial market which we have found to typically have large softeners, such as car washes and laundromats. The program was promoted through email, meetings, and in many cases cold calling businesses identified as large water users. Direct marketing of this rebate by meeting with companies tended to be the most successful approach to get businesses to apply for rebates. In 2017, we made direct contacts with 55 companies, and gave 11 chloride-specific presentations. To date, the district has made contact about the rebate program with 80% of the Madison Water Utility’s top 50 water users.

As we made calls to many facilities to make them aware of the grant, we realized many of the facility managers, maintenance supervisors, and other staff that maintain large buildings are not familiar with details of their softeners, including its age, function and salt use. Even in commercial applications, the water softener still proved to be a forgotten appliance, so we realized a need to get people who are in positions of authority in their companies up to speed on the urgency of chloride source reduction. These contacts also reinforced the challenging necessity of reaching the right people at a company with the right information, whether technical information for facilities staff or business information for managerial staff.

District staff developed and facilitated Salt Wise Soft Water training sessions for plumbers, water quality professionals, installers, building owners and facility managers, inspired by road salt trainings. The first
instance of the training in 2016 was intended to educate stakeholders about the chloride issue and how to combat it through water softener improvements. In 2017, the class expanded its audience by offering continuing education credit to plumbers for attending. In an effort to tailor class content to specific audiences, the district revised class content in 2018 to focus more on the business aspects of softener improvement, including case studies that build the business case for water softener optimization, replacement, soft water demand reduction and alternative technology use (Smart Salt Use for Business) The classes have included different elements, such as a tour of district water softeners and a panel of softener companies. The program continues to refine audiences and evolve, but maintains the core idea of providing decision makers with resources and information they need to make a change in their salt-using systems.

The table below summarizes each year’s training, including organizations represented at these trainings. The organizations in bold are those that have applied for MMSD salt reduction rebates.

<table>
<thead>
<tr>
<th>Year</th>
<th>Attendees</th>
<th>Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>39</td>
<td>SAFC, Steve Brown, Pfizer, Oak Brook Corporation, Placon, Cintas, UW-Madison, Webcrafters, UW Health, SPL, Epic, WDNR</td>
</tr>
<tr>
<td>2017</td>
<td>30</td>
<td>Steve Brown, UW-Madison, Hydrite, WI DOA, Monona Grove Schools, Epic, Madison-Kipp, Dave Jones Plumbing, Fremont, ULI, Pfizer, Epic, Plumbers Local 275, Lichtfeld Plumbing, Dane County</td>
</tr>
<tr>
<td>2018</td>
<td>34</td>
<td>Affiliated Engineers, Inc., City of Fitchburg, Covance, Gallina Management, Gorman USA, MABA, Madison-Kipp, Monona Terrace, Promega, SEH, St. Mary’s Hospital, The Edgewater, UW Health, UW-Madison, Village of McFarland, Village of Windsor, WECC, YWCA Madison</td>
</tr>
</tbody>
</table>

This focus on large softeners is not coming at the expense of ignoring household softeners. The district still recognizes the value of reducing salt contributions from single-family home softeners; the question is how to strategically approach this sector as to achieve the highest amount of home softener improvements at the lowest cost to the district. Informed by the Tenney-Lapham optimization pilot project, which had a low level of participation despite free services to homeowners and communication from the district, the district shifted to reaching homeowners with softener messages through proxy organizations with existing relationships with homeowners. Specifically, the district encouraged water softener companies, who had existing relationships both with the district and their customer base, to advocate for higher-efficiency softening with their customers. Some of this encouragement came in the form of grants, known initially as water quality professional grants and later as innovation grants. As softener companies have cited consumer hesitation and limited staff time barriers to improving softeners or upgrading to more efficient softeners, the district has provided funding to local water treatment companies to perform optimizations on every service call, to provide discounts on high-efficiency equipment, and for the additional staff time associated with upgrading customer to higher-efficiency softeners and documenting the results. These innovation grants have supported improvements to over 1600 softeners, mainly residential, for a reduction of 1038 pounds of chloride per day. A benefit of this structure is that these projects were relatively hands-off for the district. Although the district needed to spend time processing grant reports and other documentation, district staff did not have to individually approach 1600 homeowners and process paperwork for each project. Working through these companies was a significant time-saver for the district.
**Build Awareness & Engage Additional Partners**

While developing, promoting and administering incentive programs, MMSD was working to build awareness of the chloride issue. District staff have given many presentations to communicate the urgency of chloride reduction to a variety of audiences. Notable speaking engagement invitations have included:

- Water Quality Association’s Convention and Exposition
- American Water Works Association’s ACE (Annual Conference and Exposition) and the
- WEFTEC (Water Environment Federation)
- International Facility Manager’s Association
- Central States Water Environment Association (CSWEA) Pretreatment and Wisconsin Government Affairs Seminars
- Madison Area Municipal Stormwater Partnership
- MOOS Speakers Series.

The district has also incorporated messaging about the toxicity of salt to aquatic environments and the urgency of business and homeowner actions to reduce chloride into plant tour scripts and programming. District pollution prevention specialists incorporate this messaging in all plant tours they give, reaching hundreds of visitors to the plant each year.

The district’s customer communities, other municipalities, and their consultants have been target audiences for direct meetings to discuss chloride reduction tactics. District staff have met individually with customer communities, given presentations to municipal committees, and regularly attend municipal and county-level governmental meetings. The district has also begun engaging the community in other ways, including municipal pollution prevention newsletters, social media, video case studies, specialized websites, information handouts, bill stuffers, press releases, and webinars. A toolkit of resources has been developed for municipal audiences, which includes usable templates for their own direct communications to residents.

To bring softener source reduction messages to new audiences, we have also worked with various partners to communicate about chloride reduction with their constituent audiences. For example, local sustainability groups, chambers of commerce, as well as WI Salt Wise partners have their own memberships and distribution lists that they have used to disseminate chloride reduction messages. At the behest of the district, WI Salt Wise incorporated softeners into their discussions, web materials, and case studies, which had previously only focused on road salt. Water softener messages now have the benefit of an engaging website and social media presence through which video case studies, and tips and tricks can be shared.

These engagement efforts exemplify the district’s continued embrace of information sharing and co-learning, and are intended to set the stage for later behavior change initiatives. This is an area that will continue growing in the future, especially as capacity for outreach has grown with the addition of communications staff in 2017.

**Behavior Change & Innovation**

The district sees value in incentive programs, but also recognizes that other strategies are important to achieve long-term, sustainable chloride reductions. MMSD staff attended a training on community-based social marketing (CBSM), led by Doug McKenzie-Mohr, an expert in this field. This training class reinforced the importance of structuring programs to identify and address the actual barriers to desired behavior.
Incentive programs are one way of doing so, but only if the barrier to action is cost and there is funding available as long as behaviors need to change.

The district has tried out several CBSM-style strategies to encourage homeowners to check and maintain their softeners. The strategies include pledges, prompts and marketing. For example, the district hosted a Watershed Network Gathering through the Dane County Land and Water Resources Department that focused on salt and how homeowners could optimize their softening systems. The district collected pledge cards from attendees on which they were asked to take one of five pledges to reduce salt. The goal of these pledge cards was to collect initial information about what actions are perceived as easier than others. It was a very small group, so the district cannot draw definitive conclusions from the responses, but this is an example of a tactic that the district can use to try to influence behavior change.

By following up this pledge activity with multiple reminders and a follow up survey, we can start to get more information about what pledges are easy enough (low or no barriers) that people actually follow-through on, and which pledges are more difficult (more barriers) to follow through on. We can acquire additional information including what questions came up as they were trying to commit to their pledge and what kind of resources or knowledge would have enabled them to follow through. The district will continue to take opportunities to study behavior change and find ways to reduce barriers to salt reduction actions at the individual level.

Beyond individual action, focusing more on the actions of groups, the district is encouraging widespread changes to standard chloride practices through funding. Stemming from the water quality professionals grant, the broader Innovation Grant took shape in early 2018. Under this grant, entities beyond just water quality professionals can be funded to push their businesses to find new ways of doing things that require less salt. This program differs from salt reduction rebates, which are tied to actual pounds of salt reduced to the sewer. The innovation grant allows for flexibility and forward thinking, encouraging exploration of new ideas that have the potential to produce game-changing lessons.

A full summary of incentive programs, their anticipated pounds of chloride reduced, and award amounts can be referenced in ATTACHMENT D- Summary of Chloride Incentives 2015-18.

In the spirit of innovation, the district continues to evaluate and improve programs to better serve program participants and yield better results. At the second Salt Wise, Soft Water training in 2017, plumbers were offered continuing education credits through the WI Department of Safety and Professional Services. Although plumbers valued this opportunity, a follow-up survey of the class indicated that participants wanted even more specialized information to help with their trade. In 2018, the district altered its approach to training based on this feedback. The district split what had historically been one training class into two events: one seminar targeted at business decision makers and facility managers, where they could meet professionals with experience in salt-reducing interventions, and another planned class to cover more technical, hands-on information. The technical training, while still in development, will target softener installers, plumbers, handyman, and home inspectors, equipping them with new information about how to optimize a softener. Providing technical training to this audience will also allow reach into a new market of home owners who don’t know they can or should improve their softening systems.
Water Softener Source Reduction - Current Status & Next Steps

As the district looks ahead to the next five years, we plan to continue studying source reduction options, conducting outreach to encourage behavior change, and measuring and sharing results and success stories with leadership, regulators and the public.

Currently, district staff involved in chloride reduction are operating off of a five-year work plan that includes the following activities:

- Continue current rebate and innovation incentive programs and explore new tactics to stimulate participation in these programs.
- Evaluate new incentives for small-sized softener markets.
- Develop and implement technical training program.
- Leverage customer community expertise and resources.
- Strengthen regional partnerships.
- Proactively seeking cap on new chloride contributions to the sewer.
- Support research into technology and materials that will allow for the maintenance of sustainable levels of influent chloride over the long term.
- Address new challenges proactively, such as curbing the chloride impact of new development.

The search for sustainable solutions is at the heart of the district’s chloride reduction initiative. Digging deep now at the roots of the problems to uncover hidden relationships, missing knowledge, barriers and opportunities will uncover solutions to not only meet short-term chloride compliance needs, but also to sustain them in the future.

Information uncovered and lessons learned through this process will have ripple effects to improve water quality beyond our collection system. Lessons from the district’s groundbreaking chloride reduction efforts could have far-reaching impacts that can help protect fresh water across the state and region. Many stakeholders, including other wastewater treatment plants, municipalities, engineering firms, professional organizations, and regulatory agencies are watching the district’s program with interest for successful strategies that can be replicated elsewhere.
ATTACHMENT C - Who Is Salt Wise?

Wisconsin Salt Wise Partnership Overview

Wisconsin Salt Wise Partnership has been a coalition of organizations working together to reduce salt pollution in our freshwater – including rivers, lakes, streams and drinking water. As a loose partnership of various governmental organizations, without a formal organizational structure, no set leadership, consistent funding or geographic delineation, we are posed with a variety of challenges. We have accomplished a lot.

This coalition started in 2013 when a group of interested parties met to talk about salt. The participants were all concerned about the amount of salt entering our water. This group included representatives from the Madison Dane County Public Health Department, Dane County, City of Madison, Madison Area Municipal Stormwater Partnership (MAMSWaP), Wisconsin Department of Natural Resources and Madison Metropolitan Sewerage District (MMSD). The group concluded that best practices existed, but there were barriers to adoption including lack of understanding, existing social norms and expectations as well as risk and liability concerns.

The group’s decision was to develop targeted messages to five audiences (homeowners, motorists, applicators, municipal officials and EMS/Police) and to develop a joint website to house information. Together, these agencies pooled resources to hire a consultant to help bring these ideas to reality and the Wisconsin Salt Wise Partnership started.

Over time, the partnership expanded and people involved changed. Partners have pushed forward various initiatives to further the goals. Dane County took the lead on developing Wisconsin Application Rates for low speed roads; the City of Madison developed a certification program; Madison Dane County Public Health continues to publish their annual Road Salt Report which provides a yearly synopsis of trends; the Capital Area Regional Planning Commission pulled together data on chloride for their website; Madison Metropolitan Sewerage District provides grants to encourage salt reduction and case studies to aid transferability; MAMSWaP (communities in the greater Madison area that have permits for stormwater discharge) invest in training, outreach and education and community partners encourage best practices for their public works crews, invest in training/equipment and target messages to their populations.

As a coalition, Wisconsin Salt Wise developed and maintains a website and social media sites (Facebook, twitter, YouTube), focuses on training and outreach and has developed materials focused on empowering action (What can individuals, organizations and businesses do?) and removing barriers to making decisions that are good for our freshwater. The term “Salt Wise” has become synonymous with many actions – some directly linked to this partnership, others that are not.
Commercial & Industrial Salt Reduction Rebates

The district began offering direct grants for commercial-scale water softener improvements in late 2015, piloting a program that encouraged lowest-cost-per-pound chloride reductions. This program evolved into a rebate program in early 2016 based on feedback from water softener companies. In this program, businesses that complete projects that reduce their salt use, such as water softener replacement or brine reclaim addition, receive an award based on the salt reduction achieved by the project. The higher the salt reduction achieved, the higher the award.

To date, this program has funded 42 projects for a total of 932 pounds of chloride reduced per day. Several local businesses and institutions, including Epic, Hydrite, Dane County, and UW-Madison have received rebates for evaluation and/or improvement of their softeners. Including rebates for evaluation projects (called elution studies, which do not themselves reduce chloride), rebates have had a cost of $54 per pound of chloride reduced per day.

The district has received fewer rebate applications each year since 2016, which could be due to other available funding programs (such as the innovation grants described below), completion of the early adopter phase, or a remaining need to publicize these programs among potential applicants. However, the district believes it is still worthwhile to offer these rebates going forward. There is no disadvantage of having them available, and they can function as a conversation-starter with companies who are potential candidates for projects.

List of All Projects

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<th>Year of award</th>
<th>Rebate recipient name</th>
<th>Type of project</th>
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<th>Lbs. chloride reduced per day</th>
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<td>2015</td>
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<td>Emonix sensor</td>
<td>2400</td>
<td>48</td>
<td>$1200</td>
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<td>UW Biotron building</td>
<td>Emonix sensor</td>
<td>2180</td>
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<td>Dane County – Badger Prairie Health</td>
<td>Brine reclaim</td>
<td>533</td>
<td>11</td>
<td>$1000</td>
</tr>
<tr>
<td>2016</td>
<td>Dane County – City County Building</td>
<td>Brine reclaim</td>
<td>816</td>
<td>16</td>
<td>$1000</td>
</tr>
<tr>
<td>2016</td>
<td>Dane County – Courthouse</td>
<td>Brine reclaim</td>
<td>122</td>
<td>2</td>
<td>$250</td>
</tr>
<tr>
<td>2016</td>
<td>Dane County – Public Safety Building</td>
<td>Brine reclaim</td>
<td>1377</td>
<td>28</td>
<td>$1000</td>
</tr>
<tr>
<td>2016</td>
<td>Bayview Foundation</td>
<td>Optimization</td>
<td>250</td>
<td>5</td>
<td>$83</td>
</tr>
<tr>
<td>2016</td>
<td>Best Western – Inntowner</td>
<td>Replacement with brine reclaim</td>
<td>577</td>
<td>11</td>
<td>$1000</td>
</tr>
<tr>
<td>Year of award</td>
<td>Elution study rebate recipient name</td>
<td>Rebate paid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------</td>
<td>-------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>Madison United Healthcare Linen</td>
<td>$1400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>Dane County – Badger Prairie Health</td>
<td>$601</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Professional/Innovation Grants

In 2016, the district developed a professional grants program intended to give water quality experts (i.e., water softening professionals) flexibility in crafting approaches that change business practices to reduce chloride. The goal of this program was to incentivize creativity among water softening professionals to use their expertise to find lowest-cost solutions for chloride reduction. This flexible funding concept evolved into “innovation grants” in 2017, which were open to a wider pool of applicants and were intended to spur changes to business-as-usual in how chloride is used in our area.

Three of the major water softener companies in our area (Capital, Culligan Total Water and Hellenbrand) have received these grants. This funding has reimbursed these companies for associated staff time (for example, the time of optimizing softeners, upgrading customers to higher-efficiency models, and/or documenting before-and-after conditions and salt uses) as well as for pass-through rebates or discounts to customers for installing higher-efficiency softeners.

Between the professional and innovation grants, there have been 1719 projects documented for a total of 1041 pounds of chloride prevented per day, at a cost of $74 per pound, per day. The cost per pound of these projects compared to that of the rebates is higher due to the high proportion of residential softener improvements in these projects. The cost per pound of chloride reductions in residential settings under these grants was closer to $200 per pound, per day.

The advantages of these programs are their flexibility and ability to spur a relatively large number of projects. This general funding pot gives the district broad discretion in funding diverse and innovative projects that may arise. Additionally, funding an organization with significant capacity can result in widespread changes among that organization’s constituency, requiring less effort per project on the part of the district than individual rebates. In an effort to reduce administrative burden, the district has worked to simplify reporting tools to collect desired information while simplifying the process.

<table>
<thead>
<tr>
<th>Year awarded</th>
<th>Recipient</th>
<th>Number of projects</th>
<th>Salt reduced per month</th>
<th>Chloride reduced per day</th>
<th>Grant paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>Culligan Total Water</td>
<td>636</td>
<td>9774</td>
<td>195</td>
<td>$7,798</td>
</tr>
<tr>
<td>2016</td>
<td>Capital Water</td>
<td>305</td>
<td>17,398</td>
<td>348</td>
<td>$12,982</td>
</tr>
<tr>
<td>2017</td>
<td>Hellenbrand – Residential/Rental</td>
<td>427</td>
<td>8476</td>
<td>170</td>
<td>$30,744</td>
</tr>
<tr>
<td>Award Year</td>
<td># Projects</td>
<td>Awardees Included</td>
<td>Grants Awarded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>----------------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 2015-16 (Pilot Year) | 4 | Village of Shorewood Hills  
Mad Plowing & Mowing  
Friends of Lake Wingra  
Monona School District  
Steve Brown Apartments/Lucky | $20,004 |
| 2016-2017 | 5 | Town of Westport  
Town of Dunn  
Village of Deforest  
EPIC Systems | $43,115 |
| 2017 | 5 | Bruce Company  
Barnes, Inc.  
Clarmar Apartments  
Village of Deforest (innovation)  
Town of Dunn | $11,847 |
| 2018 | 5 | Adam Chern Snow & Ice  
Bruce Company  
Barnes, Inc.  
CDA – Madison Triangle  
Shorewood Hills | $47,531 |
| Total (rounded) | | | $122,500 |

$74 per pound of chloride reduced per day
## ATTACHMENT E – Annual Chloride Reports to DNR

https://www.madsewer.org/Programs-Initiatives/ChlorideFAQ

<table>
<thead>
<tr>
<th>Year</th>
<th>Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Annual Report</td>
</tr>
<tr>
<td>2011</td>
<td>Annual Report</td>
</tr>
<tr>
<td>2012</td>
<td>Annual Report</td>
</tr>
<tr>
<td>2013</td>
<td>Annual Report</td>
</tr>
<tr>
<td>2014</td>
<td>Annual Report</td>
</tr>
<tr>
<td>2016</td>
<td>Annual Report</td>
</tr>
<tr>
<td>2017</td>
<td>Annual Report</td>
</tr>
<tr>
<td>2018</td>
<td>Annual Report</td>
</tr>
</tbody>
</table>
ATTACHMENT F – Reference Documents

Commission Presentation Dates
January 29, 2015 – Chloride Treatment and Source Reduction Study Session – K. Lake
April 30, 2015 – Chloride Treatability Study Update - K. Lake
May 28, 2015 – Ecosystem Services Update – D. Taylor
June 25, 2015 – Ecosystem Services Update – D. Taylor
July 30, 2015 – Chloride Reduction 5-year Strategy – K. Lake
July 28, 2016 – K. Lake
February 20, 2018 – K. Lake

Included Documents
New Initiative Proposal
Sustainable Action Map
Variance Fact Sheet
New Initiative Proposal

INITIATIVE: Chloride Source Reduction 5-Year Strategy

LEADER: Kathy Lake, Env. Specialist  SPONSOR: Dave Taylor


WHY IS THIS IMPORTANT? (What is driving the need for this initiative?): The District’s WPDES permit includes a chloride variance which requires meeting interim mass and concentration limits, with the eventual goal of meeting the applicable water quality standard (395 mg/l). The Nine Springs effluent has exceeded these variance limits and routinely exceeds the water quality standard. Significant source reduction opportunities have been identified in our sewershed and the recently completed AECOM study indicates that the cost of adding treatment technology at the Nine Springs Plant to remove chloride is prohibitively expensive as is centralized water softening. Significant source reduction opportunities have been identified in our sewershed.

SMART GOAL STATEMENT (Specific-Measurable-Attainable-Relevant-Timeline): Achieve a 20,000 pound per day reduction in chloride load during the next permit term (2015-2020) through source reduction measures to achieve routine compliance with water quality standard of 395 mg/l.

ACTION PLAN EVENT SEQUENCE: (What are the major steps, who will be involved, when will it be done? Will there be follow ups with Executive Team?):

1. Ecosystem Services staff will present conceptual program, staffing and budget to the Commission on July 30, 2015.

2. Ecosystem Services staff will develop and implement programs for industrial, commercial, multi-family residential and single family residential users to reduce chloride discharges that are tributary to the Nine Springs Plant, using a variety of approaches including incentive/costs share programs, and partnerships with other governments, utilities and private businesses. These programs will be tested during the remainder of 2015 as pilot programs with full scale roll out anticipated in 2016/2017.

3. Ecosystem Services staff will expand existing partnerships and develop new partnerships including those with other governmental entities, utilities and private businesses. This is an on-going effort.

4. Ecosystem Services staff will develop and implement training, information, education and behavior change programs independently and/or in partnership with other interested parties. These programs will start in 2016.

5. Updates will be presented to the Commission and Executive Team at key milestones and yearly reports will be developed to illustrate the progress of this strategy.
### S.A.M. Sustainable Action Map

**Name:** CI - Source Reduction, 5-yr  
**Decision:**

#### Healthy Environment

**Natural:** How does it impact environmental health?

- **S:** Reduces amount of chloride in MMSD Effluent and therefore discharge streams without extra infrastructure, energy costs and/or additional waste streams.
- **W:** Behavior change depends on people changing behavior. This has more inherent risk than constructing treatment options.
- **O:** Increased awareness of the fate of 'salt' in our environment - leading to behavior change which improves surface water and drinking water.
- **T:** More salt could be used and discharged - offsetting the reductions through this program.

#### Strong Community

**Individual:** How does it directly impact the well-being of people?

- **S:** Lower cost compliance option for rate payers.
- **W:** Salt is cheap. Individuals have to change to make this work.
- **O:** Once behavior is changed it is more sustainable. Our cars and infrastructure (roads, sidewalks, entrances) will suffer less damage. Less 40-lbs bags to haul.
- **T:** Success may be masked if people do not change or additional pounds are added in the sewershed.

**Community:** How does it impact relationships, effective government, social justice, and overall livability?

- **S:** History shows that our community cares about local water quality. Awareness.
- **W:** Public safety perspective that more is better can trump environmental quality. People need to change behavior and expectations to make this work.
- **O:** Builds partnerships in the community, enhances the District's overall image in the community as an environmental steward.
- **T:** Growth of commerce, industry, population with continued water use reductions, can mask chloride reductions.

#### Vital Economy

**Economy:** How does it impact the local economy and at what long and short term costs?

1. Lower rates for District customers = lower cost for rate payers.
2. Saving salt may reduce costs for individuals/industries/businesses.
3. Treatment costs avoided.

- **W:** Companies sell salt and profit from its use.
- **O:** Partnerships can help businesses stay strong while reducing environmental impact.
- **T:** Perception of government getting in the way.

---

**SWOT:**  
S = Strengths  
W = Weaknesses  
O = Opportunities  
T = Threats  

---

**Madison Metropolitan Sewerage District**
Reducing chloride at its source: A better path to clean water

Since 2010, Madison Metropolitan Sewerage District has been working to reduce chloride (a component of salt) throughout the Madison area with a goal of meeting water quality standards and protecting fresh water. Every five years, the district must apply for a new operating permit with the Wisconsin Department of Natural Resources. In its upcoming permit, the district is pursuing renewal of their chloride variance to achieve the best possible outcomes for the environment and communities we serve.

Sources and paths of chloride

More than 100 tons of salt reach Madison Metropolitan Sewerage District’s wastewater treatment plant each day, and additional thousands of tons of salt are applied to roads, sidewalks and parking lots in the winter. Chloride levels above state standards pollute fresh water and threaten wildlife.

Water softeners in homes and businesses send all the salt they use to the sewer. In this area, water softeners are the main sources of salt in wastewater.

Salt in the sewer ends up at the wastewater treatment plant. The plant isn’t able to remove chloride, so it is discharged into local freshwater streams.

Road salt can end up at the wastewater treatment plant, too, though most runs directly into lakes, rivers and streams.

Some road salt also filters down into underground drinking water wells, elevating levels of chloride in our drinking water.

Options for reducing chloride

The district’s Nine Springs Wastewater Treatment Plant, like most wastewater plants, is not designed to remove dissolved chloride. The district’s permit contains a requirement to meet state chloride limits but at times, water reaching the plant exceeds these limits. In 2015, the district commissioned an engineering study to evaluate technological options at the plant to comply with these limits. At the same time, the district’s chloride reduction efforts in partnership with local businesses and government were already generating positive results. The study showed that implementing expensive treatment technology would only reduce chloride downstream of the Nine Springs Wastewater Treatment Plant while incurring significant environmental costs. The study is available at www.madsewer.org by searching “chloride compliance study.”

Treatment technologies

To reach water quality standards, one treatment option involves installation of reverse osmosis or other technologies at the treatment plant to remove incoming chloride from a portion of the wastewater received each day. This option carries heavy environmental and ratepayer costs due to energy use and the need for concentrated brine disposal. The installation of water softening technology at some area drinking water wells also could reduce overall salt use. In addition to installation costs, this option would depend on the removal of softeners from homes and business and coordination among more than 15 drinking water utilities, the participation of which is beyond control of the district.

Source reduction with variance

Source reduction of chloride involves working with individuals and businesses to reduce salt use, decreasing the amount of salt that ends up at the treatment plant and in local water bodies. This alternative, which includes water softener efficiency programs and road salt reduction, is a path to permit compliance while also improving water quality in all our lakes, rivers and streams. A variance allows time for the district to form partnerships, support development of training and certification programs, create and award grants and rebates as well as conduct outreach and education to reduce salt use.
As a result of these findings and the success of source reduction efforts to date, Madison Metropolitan Sewerage District has made a preliminary determination that a variance with source reduction is the best option to protect all local waters from chloride pollution. This option allows the district time to continue working with industrial users, water softening companies, road salt applicators and others to reduce all sources of salt and protect local fresh waters.

To learn more visit www.madsewer.org and search "chloride reduction."

### Engineering study findings on chloride compliance options

The 2015 engineering study identified a variety of compliance options and compared them by evaluating their financial, social and environmental impacts, known as a triple bottom line analysis. The table below demonstrates how use of the most sustainable technical treatment option compares to source reduction. The technical option would treat a small percentage of the daily flow and would not produce significant reductions of phosphorus or other pollutants.

<table>
<thead>
<tr>
<th>Treatment using reverse osmosis and brine minimization through evaporation and crystallization</th>
<th>Source reduction (softening and industrial improvements, road salt optimization, outreach and education)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amount of wastewater treated</strong></td>
<td>7.3 million gallons per day average (&lt;20% of average influent)</td>
</tr>
<tr>
<td><strong>Wisconsin water quality criterion: 395 milligrams per liter weekly average</strong></td>
<td>Meets standard</td>
</tr>
<tr>
<td><strong>Energy increase</strong></td>
<td>80,000 megawatt-hours per year</td>
</tr>
<tr>
<td><strong>Carbon footprint increase</strong></td>
<td>46,500 metric tons carbon dioxide equivalents per year</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>$464 million</td>
</tr>
<tr>
<td><strong>Timeline</strong></td>
<td>3 years</td>
</tr>
<tr>
<td><strong>Other benefits</strong></td>
<td>Chloride reduction in water downstream of plant</td>
</tr>
</tbody>
</table>

### A variance with source reduction represents the best path forward. Here’s why:

**Chloride source reduction would benefit overall water quality more than end-of-pipe treatment**

The district discharges clean water south of Madison, so all the chloride in the Yahara chain of lakes and in drinking water wells is from road salt. By reducing all sources of chloride, instead of just the portion that reaches the treatment plant, the district can continue to extend protection to more lakes, rivers and streams.

**End-of-pipe treatment is hard on the environment**

Technological solutions would emit thousands of tons of greenhouse gases each year, significantly increasing the plant’s carbon footprint. Additionally, treatment would create a concentrated brine waste that would need to be trucked long distances and disposed of in the environment.

As a result of these findings and the success of source reduction efforts to date, Madison Metropolitan Sewerage District has made a preliminary determination that a variance with source reduction is the best option to protect all local waters from chloride pollution. This option allows the district time to continue working with industrial users, water softening companies, road salt applicators and others to reduce all sources of salt and protect local fresh waters.

To learn more visit www.madsewer.org and search "chloride reduction."
ATTACHMENT G – Submitted 2019-2024 Pollutant Minimization Plan
Section I: General Information

Name of Permittee: Madison Metropolitan Sewerage District, Nine Springs Wastewater Treatment Plant
Permit Number: WI 0024597-08
This is: The first permit issuance requiring implementation of a PMP/SRM.
Permit Effective Date: TBD
Date of First PMP/SRM: N/A
This variance is for: Chloride

Section II: Summary of Pollutant Reduction Work Done to Date

A. Pollutant Source Identification Efforts:

Since 2010, MMSD has focused on chloride source identification and source reduction. MMSD has worked to determine the sources of chloride that are tributary to the Nine Springs Wastewater Treatment Plant. The Chloride Compliance study completed by AECOM for MMSD in 2015 identified several chloride sources and proportional contributions of each source, summarized in the following table. MMSD will continue to refine these estimates through a variety of techniques.

**Summary of Annual Average NSWTP Wastewater Chloride Contributions**

<table>
<thead>
<tr>
<th>Chloride Source</th>
<th>Annual Average Chloride Mass (lbs/day)</th>
<th>Annual Average Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background from potable water supply wells</td>
<td>11,491</td>
<td>8 %</td>
</tr>
<tr>
<td>Typical contribution from domestic wastewater</td>
<td>11,829</td>
<td>8 %</td>
</tr>
<tr>
<td>Zeolite water softener contribution</td>
<td>80,500</td>
<td>57 %</td>
</tr>
<tr>
<td>Industrial input</td>
<td>25,000</td>
<td>18%</td>
</tr>
<tr>
<td>NSWTP chemicals, septage and hauled waste</td>
<td>3,138</td>
<td>2 %</td>
</tr>
<tr>
<td>Road de-icing</td>
<td>10,000</td>
<td>7 %</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>141,968</strong></td>
<td><strong>100 %</strong></td>
</tr>
</tbody>
</table>
To further define sources and specific areas to focus on, additional actions are being undertaken.

<table>
<thead>
<tr>
<th>A. Pollutant Source Identification Efforts</th>
<th>Controllability and Learnings from Source Identification Effort</th>
<th>Date Started/Ended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Water Softener Study</td>
<td>Partially controllable: while residential sources are not normally considered controllable sources, through our softening study, we found that residential water softeners contribute significantly to influent chloride and modification/replacement of these devices could impact chloride at the plant.</td>
<td>2013/2016</td>
</tr>
<tr>
<td>Develop mass balance of chloride sources</td>
<td>Some of the sources are controllable while others are not. See explanation below for comments on which sources are not considered controllable.</td>
<td>2013/2014</td>
</tr>
<tr>
<td>Industrial Monitoring and industrial baseline</td>
<td>Initial monitoring and surveys indicated a few significant contributors which MMSD continues to focus on. Significant reductions were made with Kraft Heinz, first through permitting and further reductions were realized when their operations cease in 2017.</td>
<td>2012/2017</td>
</tr>
<tr>
<td>Evaluate MMSD sources</td>
<td>Some of the MMSD sources are controllable. MMSD continues to evaluate and optimize processes, chemicals and softening/water treatment systems.</td>
<td>2012–present</td>
</tr>
<tr>
<td>Pumping Station monitoring (by basin contribution)</td>
<td>This sampling helps us determine trends, effectiveness of intervention and focus areas.</td>
<td>2011–present</td>
</tr>
<tr>
<td>Sector surveys</td>
<td>These surveys help us determine baseline and focus areas. Future surveys will show the effectiveness of our interventions.</td>
<td>2011–present</td>
</tr>
<tr>
<td>Survey of road salt practices - MMSD customer communities</td>
<td>These surveys provide us baseline on the practices used throughout our basin. Future surveys will show the effectiveness of our interventions.</td>
<td>2014 and reoccurring</td>
</tr>
</tbody>
</table>

If any source is not controllable, please explain why.

The water supply in the area tributary to MMSD’s Nine Springs Plant has very hard water (from 17 to over 30 grains) and no source water softening is provided by local water utilities. Household water softener use is estimated to exceed 92% (study conducted by Madison Water Utility and MMSD). In our tributary basin, that approaches 100,000 individual household systems. Zeolite process with brine
regeneration is the only approved process by the State of Wisconsin. Salt-free devices are not approved for sale in Wisconsin (Wisconsin Department of Safety and Professional Services – plumbing). There is no current national certification/approval process for non-salt water conditioning devices. Because elimination of softening is not practical, efficiency improvements are required. New, efficient, softening systems cost around $1000 per unit which is a barrier. Therefore, although water softener contributions are partially controllable, tools to control this chloride source are limited by current technology and policy constraints.

In addition, chloride concentrations appear to be increasing in many source water wells. This increase passes directly to and through the wastewater plant. MMSD has minimized the use of chloride-containing chemicals at the wastewater treatment plant. However, wastewater treatment processes balance a variety of objectives, and MMSD is unable to completely eliminate the use of chloride-containing chemicals without impacting effluent quality for other parameters. Finally, the weather confounds results between years. All other things being equal, chloride concentration is inversely related to flow. Dry years have less flow and thus higher concentrations. Although MMSD does not have combined sanitary and storm sewers; stormwater can enter the sanitary sewers through infiltration/inflow. In severe winters that significantly increase road salt use in our tributary basin, chloride loads to the Nine Springs Plant can increase due to inflow/infiltration of road salt-laden water.

B. Actions Identified to Minimize Pollutant Sources

The actions below will continue to evolve:

<table>
<thead>
<tr>
<th>Action to Minimize Pollutant Sources</th>
<th>Action Implemented</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimize Chloride Use at Nine Springs Plant</td>
<td>Chemical use analysis and optimization Softener replacements Softener optimizations Emonix system installations</td>
<td>2012 &amp; on-going 2013 2014 2017</td>
</tr>
<tr>
<td>Increase knowledge of system efficiency for softening system</td>
<td>Developed, implemented and expanded water softening</td>
<td>2016, 2017 and on-going</td>
</tr>
<tr>
<td>Action to Minimize Pollutant Sources</td>
<td>Action Implemented</td>
<td>Date</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>owner, operators, manager and plumbers.</td>
<td>training program for facility managers, water softener professionals and plumbers (including continuing education credits for Salt Wise Soft Water Training)</td>
<td>Date</td>
</tr>
<tr>
<td>Development of optimization program and reporting format</td>
<td>Develop optimization reporting documentation in paper or digital form.</td>
<td>Begin in 2018, first release expected in 2019, on-going usage/refinement.</td>
</tr>
<tr>
<td>Develop innovation grant program</td>
<td>Leverage the existing customer base of various businesses and organizations to further chloride reductions.</td>
<td>2017/2018 and on-going</td>
</tr>
<tr>
<td>Motivate reductions in the amount of salt discharge by buildings that are tributary to MMSD’s plant.</td>
<td>Developed, modified and expanded grant programs for salt reductions in facilities (commercial/industrial)</td>
<td>2015, 2016, 2017 and ongoing</td>
</tr>
<tr>
<td>Increase industrial knowledge and encourage industrial practices that lead to less salt use.</td>
<td>Implemented salt discussions into annual industrial pretreatment inspections and action plans.</td>
<td>2011-present &amp; on-going</td>
</tr>
<tr>
<td>Leverage trusted messengers</td>
<td>Host a chloride meeting for MMSD customer communities to provide information and resources that each community can use to further chloride reduction goals.</td>
<td>2018</td>
</tr>
<tr>
<td>Encourage action by large user relating to salt reduction</td>
<td>Industrial chloride permit issued (industry will be shutting down operations)</td>
<td>2014/2017 (industry will be shutting down operations)</td>
</tr>
<tr>
<td>Increase regional knowledge of Winter Maintenance Best Management Practices for reducing salt use.</td>
<td>Partner with regional interested parties and the City of Madison-led certification program to offer focused training in our service area.</td>
<td>2014 &amp; on-going</td>
</tr>
</tbody>
</table>
### Action to Minimize Pollutant Sources

<table>
<thead>
<tr>
<th>Action to Minimize Pollutant Sources</th>
<th>Action Implemented</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>New softening systems are efficient and existing softening systems are set as efficiently as possible.</td>
<td>Work with manufacturers and others in the water quality industry to develop and roll-out BMP’s for softening systems.</td>
<td>2011, revised in 2014</td>
</tr>
<tr>
<td>Expand the use of new winter maintenance equipment and practices that lead to less salt use</td>
<td>Offer road salt equipment grants to reduce barrier to adopting new practices. Develop case studies that share this knowledge with others and perpetuate reductions.</td>
<td>2015, 2016 and on-going</td>
</tr>
<tr>
<td>Improve plumbing systems and softening systems to reduce building salt use.</td>
<td>Evaluate new/different technology/plumbing schemes that can help reduce chloride discharges to sewer. Evaluate barriers to adoption.</td>
<td>On-going</td>
</tr>
<tr>
<td>Reach customers at the point of softener purchase.</td>
<td>Work with Water Quality Professionals and develop outreach materials and/or programs that lead to improved softener efficiency.</td>
<td>2011 &amp; on-going</td>
</tr>
<tr>
<td>Raise the bar for softening efficiency</td>
<td>Roll-out BMP’s to water quality professionals, builders, plumbers and specifiers.</td>
<td>2011, 2014 &amp; on-going</td>
</tr>
<tr>
<td>Simplify salt-reduction rebate programs (administration and quantification)</td>
<td>Evaluate data, simplify application, simplify reporting process, work with experts.</td>
<td>2018 &amp; on-going</td>
</tr>
<tr>
<td>Determine and change social norms that do not align with ‘right sizing’ the local salt diet.</td>
<td>Test/expand behavior change initiatives; evaluate barriers.</td>
<td>Pilot test in 2016, another test in 2017 &amp; on-going</td>
</tr>
</tbody>
</table>

### Actions Taken to Maintain Source Reduction

<table>
<thead>
<tr>
<th>Maintenance of Source Reduction</th>
<th>Proposed Start Date</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C. **Actions Taken to Maintain Source Reduction**
<table>
<thead>
<tr>
<th><strong>Maintenance of Source Reduction</strong></th>
<th><strong>Proposed Start Date</strong></th>
<th><strong>Responsible Party</strong></th>
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| Implement Sewer Use Ordinance Revisions including:  
1. Requiring CMOM reporting information from customer communities (reducing inflow to sewer system)  
2. Chloride information from wells (documenting the source water chloride contribution)  
3. Allows MMSD to issue BMP oriented General Permits (chloride) | 2015 | MMSD Staff/Customer Communities |
| Wastewater monitoring of pumping stations (chloride and/or conductivity) | On-going | MMSD Staff |
| Industrial pretreatment inspections | On-going | MMSD Staff |
| Development of outreach for BMP for softening systems | 2015 | MMSD Staff/Industry partners |
| Surveys: road salt/softening/sectors | On-going | MMSD Staff |
| Permit driven compliance with major discharger | 2015 | MMSD Staff |
| On-going staffing and budget to support Chloride Source Reduction Program | 2015 & On-going | MMSD Staff |
| Increase communications and behavior change programs: update website, create videos, develop outreach materials | 2011 & on-going | MMSD Staff |
| Evaluate policy options to maintain reductions | 2018 & on-going | MMSD Staff |
| Cultivate relationships, partnerships and leverage trusted messengers. | 2011 & on-going | MMSD Staff |
| Continuing data mining, sampling/monitoring and analysis to | 2011 & on-going | MMSD Staff |
Section III: Summary of Progress and Barriers to PMP Effectiveness

Average Pollutant Concentration in Previous Year: 382 mg/l (2016)

Average Pollutant Concentration this year: 366 mg/l (2017)

Please attach a graph of the variance pollutant concentration data over the last five years:
See Attachment A.

Have you encountered any barriers that have limited pollutant minimization program/source reduction measure effectiveness? Yes, the weather impacts chloride concentration as well as mass. Concentrations are dependent on the actual flow. Severe winters lead to additional application of road salt, some of which ends up in the wastewater. The road salt that does not end up in the wastewater impacts other water. Some of the road salt ends up in the drinking water, which also ends up coming to and through the wastewater plant as an uncontrollable source. In addition, water conservation measures camouflage results of salt reduction by residents and commercial, industrial users – that is, if flow decreases proportional to a reduction in chloride mass, then the concentration will stay the same despite the mass reduction. Attachment A includes a graph showing the inverse relationship between flow and concentration as well as the seasonal variation in chloride concentration.

If so, what adjustments will you make to the program during the next year to help address these barriers? Road salt impacts all waters of the state. The salt that does not arrive at a wastewater treatment plant ends up in groundwater, lakes, rivers, wetlands and/or drinking water. Locally, Dane County hired a consultant to convene a team of applicators to develop Wisconsin based road salt application rates for low-speed roadways and parking lots. These were tested in 2017-18. The City of Madison led the development of a voluntary certification program for road salt applicators. This program is available statewide and was first tested during the winter of 2017-18. MMSD aims to incorporate these practices into training for our customer communities and others applying road salt in our basin. The waters of Wisconsin would be most helped with a statewide approach to address and improve the use of road salt.

Salt-less softening technologies exist and appear to be successfully used throughout the world. Wisconsin’s Department of Safety and Professional Services does not currently allow these systems to be considered for residential use. Our understanding is that Wisconsin is the only state with this

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<th>Maintenance of Source Reduction</th>
<th>Proposed Start Date</th>
<th>Responsible Party</th>
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<td>maintain focus in correct areas.</td>
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requirement. With the known risk of chloride use on Wisconsin’s water and the number of chloride
variances in the State, we greatly appreciate DNR evaluating a solution to this barrier.

Section IV: Planned Actions

MMSD worked to develop and secure staff resources and the budget needed to implement a chloride
reduction strategy focused on source reduction and pollution prevention. This strategy involves
investment in non-traditional areas including rebates and incentives as well as education and training
focused on changing social norms and behavior. Specific actions are included below:

<table>
<thead>
<tr>
<th>A. Pollutant Source Identification Efforts</th>
<th>Proposed Start Date</th>
<th>Responsible Party</th>
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<tbody>
<tr>
<td><strong>Pump Station Monitoring</strong>: Evaluate geographic distribution and peaking throughout the system by monitoring pumping station samples for chloride.</td>
<td>On-going</td>
<td>MMSD Staff</td>
</tr>
<tr>
<td><strong>User Charge Sampling</strong>: Analyze user Charge Program samples for chloride. Evaluate the viability of adding chloride as a billing parameter.</td>
<td>2019</td>
<td>MMSD Staff</td>
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<tr>
<td><strong>Road Salt Practices</strong>: Evaluate the current status and improvements through a re-survey of customer communities.</td>
<td>2017 and on-going</td>
<td>MMSD Staff</td>
</tr>
<tr>
<td><strong>Baseline social-science survey</strong>: Study existing sources of chloride, and gather information specifically for development of future outreach strategies; measure awareness and attitudes; collect information about barriers to homeowner action through scientific survey.</td>
<td>2017/2018</td>
<td>MMSD Staff and possible consultant</td>
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<th>B. Actions to Minimize Pollutant Sources</th>
<th>Proposed Start Date</th>
<th>Responsible Party</th>
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<tr>
<td><strong>Administer training programs</strong>: SaltWise Soft Water Training; Winter Maintenance</td>
<td>2017 &amp; ongoing</td>
<td>MMSD Staff</td>
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<tr>
<td><strong>A. Pollutant Source Identification Efforts</strong></td>
<td><strong>Proposed Start Date</strong></td>
<td><strong>Responsible Party</strong></td>
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<tr>
<td>Training and develop/roll-out homeowner information and training program.</td>
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<tr>
<td><strong>Offer and expand salt-reduction rebate programs</strong>: simplify administration/quantification for programs; continue ‘commercial/industrial’ rebate program; continue ‘professional’ grant program; evaluate new or expanded programs to target specific markets.</td>
<td>2015 &amp; ongoing</td>
<td>MMSD Staff</td>
</tr>
<tr>
<td><strong>Offer Road Salt Equipment Grants</strong>: Target private and municipal operations; Incentivize salt-reducing innovations and develop leaders in the ‘new normal;’ measure change in winter maintenance policy &amp; practices through follow up to 2014 &amp; 15 surveys.</td>
<td>2015 &amp; on-going</td>
<td>MMSD Staff</td>
</tr>
<tr>
<td><strong>Behavior Change Initiatives</strong>: Develop programs to change behavior/social norms with businesses and individuals; leverage WiSaltWise to change behavior and social norms.</td>
<td>2018</td>
<td>MMSD Staff</td>
</tr>
<tr>
<td><strong>Capitalize on low-hanging fruit</strong>: Develop outreach kit; focus industrial contacts on chloride reduction opportunities; attend community events as appropriate, with emphasis on chloride information.</td>
<td>Various actions start during 2017-2019</td>
<td>MMSD Staff</td>
</tr>
<tr>
<td><strong>Expand digital presence</strong>: expand WiSaltWise.com/campaign and web resources (MMSD website, social media, videos)</td>
<td>Summer/Fall 2015 – On-going</td>
<td>Consortium/MMSD Staff</td>
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<tr>
<td>C. Maintenance of Source Reduction</td>
<td>Proposed Start Date</td>
<td>Responsible Party</td>
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<tr>
<td><strong>Quantifications/Data Mining:</strong> analyze historic data; determine magnitude of previous reductions; develop estimates of and future viability.</td>
<td>2017</td>
<td>MMSD Staff</td>
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<tr>
<td><strong>Lay groundwork for new construction/wholesale market program:</strong> (with significant growth of business and housing, new softening systems continue to be installed.) Evaluate market and potential entry points; gather information specifically for development of future outreach and/or incentive strategies.</td>
<td>2017/2018</td>
<td>MMSD Staff</td>
</tr>
<tr>
<td><strong>Cultivate relationships/leverage partnerships:</strong> leverage existing social networks, build new relationships with hotels/apartments/industry; continue to facilitate conversations between salt reduction champions and their peers; partner with sustainability focused programs in the region to identify and leverage synergies and speak in venues where our messages can reach broad audiences.</td>
<td>2017</td>
<td>MMSD Staff</td>
</tr>
<tr>
<td><strong>Communications:</strong> Develop and roll out videos/case studies and industry/large water user focused messages; target outreach and develop messaging.</td>
<td>2017</td>
<td>MMSD Staff</td>
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<tr>
<td><strong>Wisconsin Salt Wise:</strong> undertake strategic planning to establish the future structure of Wisconsin Salt Wise.</td>
<td>2019</td>
<td>Wisconsin Salt Wise Partners and other key voices</td>
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C. Maintenance of Source Reduction

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<tr>
<th>Funding and staffing: maintain on-going staffing and budget to support Chloride Source Reduction Program</th>
<th>Proposed Start Date</th>
<th>Responsible Party</th>
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<tr>
<td>Yearly</td>
<td>MMSD Staff, Ecosystem Services Director and Chief Engineer/Director</td>
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**Section V: Notes**

Attachment A contains further information.

**Section VI: Certification**

I certify that the information contained in this document and all attachments were gathered and prepared under my supervision and based on inquiry of people directly under my supervision and that, to the best of my knowledge, the information is true, accurate and complete.

_______________________________________
Martin Griffin, Director of Ecosystem Services

_______________________________
Date
Attachment A - MMSD Nine Springs Chloride Concentration and Mass

The graphs below show the successes and challenges of chloride source reduction. Chloride concentration reflects the amount of chloride as well as the amount of diluting water. Water conservation measures reduce water use and lead to more concentrated effluent. Lighter winters, with less road salt use (like 2016 and 2017), tend to have less mass in chloride. High flow years (like 2013), also tend to have lower concentrations. Figure 1 shows the historic chloride concentration at MMSD’s Nine Springs Plant.

![Graph showing MMSD Effluent Chloride Conc (annual average, mg/L)](image)

*Figure 1*

Figure 2 shows the weekly average concentrations for the time period of 2013 through 2017. There is significant variability throughout the year but each year follows a similar path. Early in the year, road salt is applied and some of that reaches the sewer system during a lower flow period of the year, resulting in higher concentrations. This graph illustrates the challenges and weather dependency of many chloride reduction interventions. It is encouraging that for large portions of the year, concentrations meet the water quality standard.
MMSD’s Chloride Source Reduction program has been operating since October, 2010. Since this time, the trend line for chloride mass has reversed (Figure 3). This is even more encouraging because this period of time has realized significant growth (and additional soft water systems and roadways) in our tributary basin.

Figure 4 shows 2017 weekly average mass and flow data. When flows are high, concentrations come down significantly. This graph shows that the mass of chloride decreases in non-road salt months.
Figure 4
Legislative Update

PFAS Assembly Amendment 2 to SB 559: This amendment directs a UW System study on PFAS, directs DNR to test municipal water systems and private wells for PFOS and PFOA and provide clean drinking water in affected areas, directs DNR to recoup payments for testing, investigation, and clean water from responsible parties who have used firefighting foam, and directs DNR to set lab cert standards.

SB 717/AB 792: This bill provides $250,000 for DATCP and DNR to administer a voluntary program to collect and store or dispose of firefighting foam containing PFAS.

LRB 4148: This bill would require DNR to determine whether a safe alternative exists for PFAS in food packaging and potentially prohibit the manufacture, sale, or distribution of food packaging containing PFAS.

PFAS SB 772/AB 843. Senator Hansen and Representative Nygren introduced this alternative to the comprehensive bill offered by Senators Hansen and Miller (discussed below). This bill requires DNR to promulgate emergency rules for groundwater standards for PFOS and PFOA, but not surface or drinking water standards, and requires DNR to establish air emissions standards. It also provides that DNR may require proof of financial responsibility for a person who possesses or controls a PFAS substance and creates a municipal grant program for site investigation and remediation. A hearing was held on this bill in the Assembly Committee on Environment on February 6 and in the Senate Committee on Natural Resources and Energy on February 7. [No change]

PFAS SB 774/AB 845. Senator Cowles introduced a bill that would create PFAS Management Zones around areas of PFAS contamination. Within these zones, people would be eligible for well compensation funding to provide treatment and/or well replacement. Biosolids land applied within these zones would be subject to testing, as would biosolids from any municipal wastewater treatment plants serving areas in a PFAS Management Zone. A hearing was held on this bill in the Assembly Committee on Environment on February 6 and in the Senate Committee on Natural Resources and Energy on February 7. [No change]

PFAS SB 109/AB 85. A public hearing was held on Assembly Bill 85, which imposes a 90-day timeframe for the establishment of groundwater quality standards for PFOA and PFOS. This bill is unlikely to move forward now that the DHS has released its proposed standards. [No change]

PFAS SB 302/AB 321. On May 23, 2019, Senators Hansen and Miller announced a far more comprehensive PFAS bill, which would require DNR to establish and enforce standards for a wide range of PFAS. This would include standards for drinking water, surface water, solid waste, soil and sediment among other things. No hearing has yet been scheduled. [No change]

PFAS SB 310/AB 323. This bill, introduced by Rep. Nygren and Sen. Cowles, would prohibit the use of firefighting foams that contain intentionally added PFAS in training. This bill was published as law February 6, 2020.

Trading Clearinghouse SB 91/AB 113. Legislation creating a trading clearinghouse, was recently signed into law by the Governor.

Pipeline Bill SB 365/AB 450. This bill would generally prohibit local governmental units form excluding from consideration the use of piping materials that meet a project’s standards unless there are sound engineering practices to suggest that a particular type of pipe is necessary for that project. This bill was referred to the Committee on Utilities and Housing on August 22. Fiscal estimates were received in October but no hearing has been scheduled. [No change]

Proposed Rules

Biocriteria, Phosphorus Response Criteria, and Site Specific Limits. DNR requested and received adoption of this
proposed rule at December Natural Resources Board meeting. This rule is now at the Legislature.

**Bacteria Standards.** The Natural Resources Board adopted Board Order WY-17-15 at its meeting on October 23, 2019. This rule is now at the Legislature.

**Rules in Scoping Stage**

**PFAS.** DNR received approval of the three scope statements related to PFAS standards at the January Natural Resources Board meeting. DNR will hold its next public stakeholder meeting on these rules on March 23, 2020.

The two subgroups of the Wisconsin PFAS Action Council, the Local Government Group and the Citizen/Public Policy Advisory Group, will next meet on April 2, 2020.

**Anti-degradation Standards.** DNR is planning to re-scope this rule before proceeding with further rule development.

**Guidance Documents**

**PFAS Lab Certification Guidance.** DNR has now finalized this guidance and made certification for labs available as of October 29, 2019.

**Watershed Trading.** The comment period on the watershed trading guidance closed on February 10, 2020.

**Adaptive Management.** The comment period on the watershed trading guidance closed on February 10, 2020.
**Location:** Maintenance Training Facility  
**Note:** All dates are tentative and subject to change

<table>
<thead>
<tr>
<th>Meeting Date</th>
<th>Agenda Topics</th>
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</thead>
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| 03/12/2020 8 a.m. | **Introductions:**  
➢ Bob Jacobs and Kody Wright, Locators – Ray Schneider  
➢ Ileana Rodriquez, HR Generalist – Jennifer Peters  
**Consent**  
➢ Approval of Minutes  
➢ Cash Statements: Operating and Capital Projects  
➢ Review and Approval of Sewer Extension Plans – Curt Sauser  
   o Dairy Drive Assessment District – 2019, City of Madison  
   o Crescent Crossing Phase 1, City of Fitchburg  
   o Acacia Ridge Phase 4, City of Madison  
   o Covered Bridges Residences of Bear Tree Farms, Village of Windsor  
➢ Increase of Approved Transaction Amount: Grass Lake Dike Restoration Design Professional Services (Cardno) – Jeff Klawes  
➢ Expedited Annexation 2020-01 Monona Grove School District, Village of Cottage Grove – Curt Sauser  
➢ Award of Contract for Sodium Hypochlorite – Eric Dundee  
➢ Increase Approved Transaction Authority Limit: I/I Reduction Program Plan Professional Services (Brown & Caldwell) – Jen Hurlebaus  
**Topics**  
➢ Oath of Office – New Commissioner Beth Bookland – Michael Mucha  
➢ Introduction of Annexation Request 2020-02 and Scheduling of Public Hearing for a Parcel in the Town of Middleton: Pioneer Pointe, Town of Middleton – Curt Sauser  
➢ Creation of a Commission Workgroup for the Chief Engineer and Director’s Performance Review – Commissioner Ezra Meyer  
➢ Update on Chloride Reduction Program – Kathy Lake  
**CED Update**  
➢ Chief Engineer and Director’s Report – Michael Mucha  
➢ Regulatory/Legal Review – Paul Kent
<table>
<thead>
<tr>
<th>Meeting Date</th>
<th>Agenda Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/26/2020 8 a.m.</td>
<td><strong>Consent</strong>&lt;br&gt;➢ Approval of Minutes&lt;br&gt;➢ Review and Approval of Sewer Extension Plans – <em>Curt Sauser</em>&lt;br&gt;➢ Accept Plant Asset Management Plan – <em>Seth McClure</em>&lt;br&gt;➢ Acceptance of Work and Close-out of 2019 Televising and Cleaning – <em>Jen Hurlebaus</em>&lt;br&gt;&lt;br&gt;<strong>Topics</strong>&lt;br&gt;➢ TBD&lt;br&gt;&lt;br&gt;<strong>CED Update</strong>&lt;br&gt;➢ Chief Engineer and Director’s Report – <em>Michael Mucha</em>&lt;br&gt;➢ Regulatory/Legal Review – <em>Paul Kent</em>&lt;br&gt;➢ Operations Report</td>
</tr>
<tr>
<td>04/16/2020 8 a.m.</td>
<td><strong>Consent</strong>&lt;br&gt;➢ Approval of Minutes&lt;br&gt;➢ Cash Statements: Operating and Capital Projects&lt;br&gt;➢ Review and Approval of Sewer Extension Plans – <em>Curt Sauser</em>&lt;br&gt;➢ Review of Bids and Award of 2020 Televising and Cleaning Contract – <em>Jen Hurlebaus</em>&lt;br&gt;&lt;br&gt;<strong>Topics</strong>&lt;br&gt;➢ Approval of 1st Quarter Sewer Service Charges – <em>Todd Gebert</em>&lt;br&gt;➢ Review of Bids and Award of Contract for Sample Collection and Laboratory Analysis for PFAS – <em>Martye Griffin</em>&lt;br&gt;➢ Policy Governance Training (60 minutes) – <em>Michael Mucha</em>&lt;br&gt;&lt;br&gt;<strong>CED Update</strong>&lt;br&gt;➢ Chief Engineer and Director’s Report – <em>Michael Mucha</em>&lt;br&gt;➢ Regulatory/Legal Review – <em>Paul Kent</em></td>
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<td>04/30/2020 8 a.m.</td>
<td><strong>Consent</strong>&lt;br&gt;➢ Approval of Minutes&lt;br&gt;➢ Review and Approval of Sewer Extension Plans – <em>Curt Sauser</em>&lt;br&gt;&lt;br&gt;<strong>Topics</strong>&lt;br&gt;➢ Review of Bids &amp; Award of Contract: 2020 Interceptor Rehabilitation – <em>Eric Hjellen</em>&lt;br&gt;&lt;br&gt;<strong>CED Update</strong>&lt;br&gt;➢ Chief Engineer and Director’s Report – <em>Michael Mucha</em>&lt;br&gt;➢ Regulatory/Legal Review – <em>Paul Kent</em>&lt;br&gt;➢ Operations Report</td>
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<td>05/14/2020 8 a.m.</td>
<td><strong>Consent</strong>&lt;br&gt;➢ Approval of Minutes&lt;br&gt;➢ Cash Statements: Operating, Capital Projects, and Debt Service</td>
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<td>Meeting Date</td>
<td>Agenda Topics</td>
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| 05/28/2020 8 a.m. | **Consent**  
➤ Approval of Minutes  
➤ Review and Approval of Sewer Extension Plans – Curt Sauser  
**Topics**  
➤ 2021 Budget Preview – Dana Burmaster  
**CED Update**  
➤ Chief Engineer and Director’s Report – Michael Mucha  
➤ Regulatory/Legal Review – Paul Kent |
| 06/11/2020 8 a.m. | **Consent**  
➤ Approval of Minutes  
➤ Cash Statements: Operating and Capital Projects  
➤ Review and Approval of Sewer Extension Plans – Curt Sauser  
**Topics**  
➤ TBD  
**CED Update**  
➤ Chief Engineer and Director’s Report – Michael Mucha  
➤ Regulatory/Legal Review – Paul Kent  
➤ Operations Report |
| 06/25/2020 8 a.m. | **Consent**  
➤ Approval of Minutes  
➤ Review and Approval of Sewer Extension Plans – Curt Sauser  
**Topics**  
➤ Revisions to Sewer Use Ordinance – Jeff Brochtrup  
➤ Report on Review of Industrial and Commercial Users Related to PFAS – Martye Griffin  
**CED Update**  
➤ Chief Engineer and Director’s Report – Michael Mucha  
➤ Regulatory/Legal Review – Paul Kent  
➤ Operations Report |
<table>
<thead>
<tr>
<th>Meeting Date</th>
<th>Agenda Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>07/16/2020 8 a.m.</td>
<td><strong>Consent</strong>&lt;br&gt;➢ Approval of Minutes&lt;br&gt;➢ Cash Statements: Operating and Capital Projects&lt;br&gt;➢ Review and Approval of Sewer Extension Plans – Curt Sauser&lt;br&gt;<strong>Topics</strong>&lt;br&gt;➢ Approval of 2nd Quarter Sewer Service Charges – Todd Gebert&lt;br&gt;<strong>CED Update</strong>&lt;br&gt;➢ Chief Engineer and Director’s Report – Michael Mucha&lt;br&gt;➢ Regulatory/Legal Review – Paul Kent</td>
</tr>
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<td>07/30/2020 8 a.m.</td>
<td><strong>Consent</strong>&lt;br&gt;➢ Approval of Minutes&lt;br&gt;➢ Review and Approval of Sewer Extension Plans – Curt Sauser&lt;br&gt;<strong>Topics</strong>&lt;br&gt;➢ TBD&lt;br&gt;<strong>CED Update</strong>&lt;br&gt;➢ Chief Engineer and Director’s Report – Michael Mucha&lt;br&gt;➢ Regulatory/Legal Review – Paul Kent&lt;br&gt;➢ Operations Report</td>
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<td>08/13/2020 8 a.m.</td>
<td><strong>Consent</strong>&lt;br&gt;➢ Approval of Minutes&lt;br&gt;➢ Cash Statements: Operating and Capital Projects&lt;br&gt;➢ Review and Approval of Sewer Extension Plans – Curt Sauser&lt;br&gt;<strong>Topics</strong>&lt;br&gt;➢ TBD&lt;br&gt;<strong>CED Update</strong>&lt;br&gt;➢ Chief Engineer and Director’s Report – Michael Mucha&lt;br&gt;➢ Regulatory/Legal Review – Paul Kent&lt;br&gt;➢ Operations Report</td>
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<td>08/27/2020 8 a.m.</td>
<td><strong>Consent</strong>&lt;br&gt;➢ Approval of Minutes&lt;br&gt;➢ Review and Approval of Sewer Extension Plans – Curt Sauser&lt;br&gt;<strong>Topics</strong>&lt;br&gt;➢ TBD&lt;br&gt;<strong>CED Update</strong>&lt;br&gt;➢ Chief Engineer and Director’s Report – Michael Mucha&lt;br&gt;➢ Regulatory/Legal Review – Paul Kent&lt;br&gt;➢ Operations Report</td>
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<td>09/10/2020 8 a.m.</td>
<td><strong>Agenda Topics</strong>&lt;br&gt;➢ Approval of Minutes&lt;br&gt;➢ Cash Statements: Operating and Capital Projects&lt;br&gt;➢ Review and Approval of Sewer Extension Plans – Curt Sauser&lt;br&gt;<strong>Topics</strong>&lt;br&gt;➢ TBD&lt;br&gt;<strong>CED Update</strong>&lt;br&gt;➢ Chief Engineer and Director’s Report – Michael Mucha&lt;br&gt;➢ Regulatory/Legal Review – Paul Kent</td>
</tr>
<tr>
<td>09/24/2020 8 a.m.</td>
<td><strong>Agenda Topics</strong>&lt;br&gt;➢ Approval of Minutes&lt;br&gt;➢ Review and Approval of Sewer Extension Plans – Curt Sauser&lt;br&gt;<strong>Topics</strong>&lt;br&gt;➢ TBD&lt;br&gt;<strong>CED Update</strong>&lt;br&gt;➢ Chief Engineer and Director’s Report – Michael Mucha&lt;br&gt;➢ Regulatory/Legal Review – Paul Kent&lt;br&gt;➢ Operations Report</td>
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<td>10/15/2020 8 a.m.</td>
<td><strong>Agenda Topics</strong>&lt;br&gt;➢ Approval of Minutes&lt;br&gt;➢ Cash Statements: Operating and Capital Projects&lt;br&gt;➢ Review and Approval of Sewer Extension Plans – Curt Sauser&lt;br&gt;<strong>Topics</strong>&lt;br&gt;➢ Approval of 3rd Quarter Sewer Service Charges – Todd Gebert&lt;br&gt;<strong>CED Update</strong>&lt;br&gt;➢ Chief Engineer and Director’s Report – Michael Mucha&lt;br&gt;➢ Regulatory/Legal Review – Paul Kent</td>
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<tr>
<td>10/29/2020 8 a.m.</td>
<td><strong>Agenda Topics</strong>&lt;br&gt;➢ Approval of Minutes&lt;br&gt;➢ Review and Approval of Sewer Extension Plans – Curt Sauser&lt;br&gt;<strong>Topics</strong>&lt;br&gt;➢ Review and Adoption of 2021 Sewer Service Charge Rates and Septage Disposal Rates – Jeff Brochtrup&lt;br&gt;<strong>CED Update</strong>&lt;br&gt;➢ Chief Engineer and Director’s Report – Michael Mucha&lt;br&gt;➢ Regulatory/Legal Review – Paul Kent&lt;br&gt;➢ Operations Report</td>
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| **11/12/2020 8 a.m.** | Consent  
➢ Approval of Minutes  
➢ Cash Statements: Operating, Capital Projects, and Debt Service  
➢ Review and Approval of Sewer Extension Plans – Curt Sauser  

Topics  
➢ Strategic Financial Planning Update – Bill Walker  

CED Update  
➢ Chief Engineer and Director’s Report – Michael Mucha  
➢ Regulatory/Legal Review – Paul Kent |
| **11/25/2020 8 a.m.** | Consent  
➢ Approval of Minutes  
➢ Review and Approval of Sewer Extension Plans – Curt Sauser  

Topics  
➢ TBD  

CED Update  
➢ Chief Engineer and Director’s Report – Michael Mucha  
➢ Regulatory/Legal Review – Paul Kent  
➢ Operations Report |
| **12/17/2020 8 a.m.** | Consent  
➢ Approval of Minutes  
➢ Cash Statements: Operating and Capital Projects  
➢ Review and Approval of Sewer Extension Plans – Curt Sauser  

Topics  
➢ Energy Management Master Plan Update – Matt Seib  

CED Update  
➢ Chief Engineer and Director’s Report – Michael Mucha  
➢ Regulatory/Legal Review – Paul Kent  
➢ End of Year Review—Michael Mucha |