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

Scott Walker, Governor
Cathy Stepp, Secretary
Telephone 608-266-2621
FAX 608-267-3579
TTY Access via relay - 711

WISCONSIN
DEPT. OF NATURAL RESOURCES

Ms. Tinka Hyde, Director, Water Division
U.S. EPA, Region 5
77 W. Jackson
Chicago, IL 60604

Subject: Certification Statement for Approval of a Variance to Water Quality Standards
Delafield Hartland Pollution Control Commission; WPDES Permit WI-0032026-08-0

Dear Ms. Hyde:

The Wisconsin Department of Natural Resources has made a final decision under Wis. Stat. s. 283.15 (4) to approve a variance to the water quality standard for chloride at the above-named facility. This decision is subject to judicial review pursuant to Wis. Stat. ss. 283.15(4)(d) and 227.52. Although the Department has issued a final decision on the chloride variance, including the permit terms and conditions of the variance, the Department recognizes that the chloride variance and related permit conditions may not be included in the final reissued WPDES permit until EPA has approved the variance.

Pursuant to §§ 40 CFR Part 131.21 and 131.6, the Department must submit a certification statement to EPA for each variance approved in the state. The statement must certify that the variance to a water quality standard was approved in accordance with state law.

Accordingly, I hereby certify that the chloride variance for Delafield Hartland Pollution Control Commission in Waukesha County was reviewed and approved by Department staff in accordance with procedures in subchapter VII of chapter NR 106, Wis. Adm. Code. The application for this variance was submitted on September 4, 2014 and the Department public noticed its intent to reissue the permit and grant the chloride variance on October 16, 2014 in accordance with Wis. Stats. §§ 283.15(3) and 283.39.

If you have any questions regarding the variance approval, please contact Laura Dietrich at (414) 263-8651.

Sincerely,

Robin M Stahl for

Timothy A. Andryk
Chief Legal Counsel

DATED IN MADISON: 11/25/2014.

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WISCONSIN
DEPT. OF NATURAL RESOURCES

Ms. Tinka Hyde, Director, Water Division
U.S. EPA, Region 5
77 W. Jackson Boulevard
Chicago, IL 60604

Subject: Request for Approval of a Variance from Water Quality Standards for Chloride
Receiving Stream: Bark River, Bark River Watershed, Lower Rock River Basin, Waukesha County
Permittee: Delafield Hartland Pollution Control Commission, WPDES WI-0032026-08-0

Dear Ms. Hyde:

In accordance with s. 283.15 of the Wisconsin Statutes and Title 40, Part 131 of the Code of Federal Regulations, the Department requests U.S. EPA, Region 5 to approve a water quality standards variance for the above-referenced discharge. The water quality criterion for which the permittee is seeking a variance is contained in chapter NR 105, Wisconsin Administrative Code.

To assist your staff during their review, relevant background information pertaining to this variance is attached to this letter. The draft permit and variance were publicly noticed on October 16, 2014. The comment period has now ended. No comments from the public have been received related to the proposed variance.

We are committed to working with the permittee during the term of this variance to find a solution that will lead to full compliance with the applicable water quality standard. Conditions on the variance, which are included in the WPDES permit, specify actions to be taken by the permittee and timetables for those actions. If the variance is approved by EPA, the Department will include the variance limitation and related conditions in the final WPDES permit.

We appreciate your consideration of this request. Should you have further questions regarding this matter, please contact Laura Dietrich at (414) 263-8651.

Sincerely,

Russell A. Rasmussen, Administrator
Water Division

DATED: November 26, 2014

Attachment
e-cc Timothy Thompson – Southeast Region/Milwaukee
David Pfeifer - EPA, Region 5

BACKGROUND INFORMATION REGARDING WATER QUALITY STANDARDS VARIANCE

Receiving Stream and Classification: **Bark River, Bark River Watershed, Lower Rock River Basin, Waukesha County, Warm water sport fish community, non-public water supply**

Criterion: **395 mg/L chronic toxicity criterion in ch. NR 105, Wis. Adm. Code**

Water Quality Based Effluent Limit: **466 mg/L**

Permit Limit Based on Proposed Variance: **Interim Limit: 615 mg/L; Target Limit: 490 mg/L**

Duration of Variance: **From the effective date of the permit reissuance through the end of the permit term. The draft permit has an expiration date of December 31, 2019.**

Department Rationale for Approving Variance:
S. NR 106.83(2), Wis. Adm. Code, outlines findings that justify expediting variances chloride. More specifically:

a) The Department considers treating these large volumes to produce effluent that reliably meets the water quality-based effluent limit to be prohibitively expensive. See Section VII of the Facility Specific Standard Variance Data Sheet for clarification.
b) End-of-pipe wastewater treatment technology for chloride produces concentrated brine that can be as much or more of a liability than the untreated effluent. Since the concentrated brine cannot be further treated, the only recourse for the disposal of the brine is transfer to another community, which is often not feasible.
c) Appropriate chloride source reduction activities are preferable environmentally to effluent end-of-pipe treatment in most cases, since the end product of treatment (production of a concentrated brine) does not remove the load of chloride from the environment.
d) For some dischargers, attaining the water quality-based effluent limit for chloride may cause substantial and widespread adverse social and economic impacts in the area where the discharge is located.

The Department concludes that the applicant has met the requirements of Subchapter VII of ch. NR 106, Wis. Adm. Code, and s. 283.15, Wis. Stats. The Department further concludes that requiring the applicant to meet the water quality standard for chloride at this time would result in substantial and widespread adverse social and economic impacts. The Department therefore proposes to grant the variance for chloride.

Conditions to be Included in WPDES Permit: **See Draft Permit being sent to EPA in Electronic Format.**

Attachments:
Facility Specific Standard Variance Data Sheet
Certification from DNR Chief Legal Counsel

Facility Specific Standard Variance Data Sheet

Directions: Please complete this form electronically. Record information in the space provided. Select checkboxes by double clicking on them. Do not delete or alter any fields. For citations, include page number and section if applicable. Please ensure that all data requested are included and as complete as possible. Attach additional sheets if needed.

Section I: General Information

A. Name of Permittee: Delafield Hartland Pollution Control Commission

B. Facility Name: Delafield Hartland Pollution Control Commission

C. Submitted by: Wisconsin Department of Natural Resources

D. State: Wisconsin **Substance:** Chloride **Date completed:** Drafter

E. Permit #: WI-0032026-08 **WQSTS #:** (EPA USE ONLY)

F. Duration of Variance **Start Date:** January 1, 2015 **End Date:** December 31, 2019

G. Date of Variance Application: Drafter

H. Is this permit a: ☐ **First time submittal for variance**
☒ **Renewal of a previous submittal for variance** *(Complete Section IX)*

I. Description of proposed variance: The proposed weekly average interim limit is 615 mg/L.

J. List of all who assisted in the compilation of data for this form

Name	Email	Phone	Contribution
Laura Dietrich	Laura.Dietrich@wisconsin.gov	(414) 263-8651	EPA Datasheet
Timothy Thompson	Timothy.Thompson@wisconsin.gov	(414) 263-8525	Parts II, IV, VIII, IX and X
Diane Figiel	Diane.Figiel@wisconsin.gov	(608) 264-6274	Parts II D-H and J
Jim Schmidt	Jamesw.schmidt@wisconsin.gov	(608) 267-7658	Environmental Analysis portions of datasheet

Section II: Criteria and Variance Information

A. Water Quality Standard from which variance is sought: Chloride

B. List other criteria likely to be affected by variance: None, chloride was the only substance requested for a variance. Acute and chronic aquatic life toxicity criteria are available for chloride.

C. Source of Substance: Primarily from water softeners and winter salt application.

D. Ambient Substauce Conceutration: Assumed zero ☐ **Measured** ☐ **Estimated** ☐ **Default** ☒ **Unknown**

If measured or estimated, what was the basis? Include citation. With limited dilution from the receiving water the ambient concentration has minor impact on the calculated limit. An ambient concentration of 59 mg/L is used to assess downstream impacts based on multiple locations on the Bark River in Waukesha County.

E. Average effinent discharge rate: 3.23 MGD (Annual Average Design) **Maximum effinent discharge rate:** 6.54 MGD (Peak daily design flow)

F. Effinent Snbstance Concentration: Peak weekly = 615 mg/L, Peak daily = 724 mg/L ☒ **Measnred** ☐ **Estimated** ☐ **Default** ☐ **Unknown**

H. If measured or estimated, what was the basis? Inclnde Citation. Effluent data from March 2010 through June 2014

I. Level currently achievable (LCA): 690 mg/L

J. Variance Limit: 615 mg/L

K. What data were used to calculate the LCA, and how was the LCA derived? *(Immediate compliance with LCA is required.)* The LCA of 690 mg/L is the highest calculated weekly average concentration from submitted chloride date in the last three years. This occurred in March of 2012.

L. Explain the basis used to determine the variance limit (which must be ≤ LCA). Include citation.
The variance limit is determined by calculating the 4-day P99 of submitted chloride data (NR 106.82(9)(a)). Note that the condition above is satisfied (615 mg/L < 690 mg/L).

M. Select all factors applicable as the basis for the variance provided ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☒ 6

under 40 CFR 131.10(g). Summarize justification below:
Without the variance, meeting the WQBEL would result in substantial and widespread economic and social impact.

Section III: Location Information

A. Counties in which water quality is potentially impacted: Waukesha County

B. Receiving waterbody at discharge point: Bark River

C. Flows into which stream/river? Rock River **How many miles downstream?** ~40

D. Coordinates of discharge point (UTM or Lat/Long): Lat. 43.0327/Long. -88.4507

E. What is the distance from the point of discharge to the point downstream where the concentration of the substance falls to less than or equal to the chronic criterion of the substance for aqnatic life protection?
Four miles

F. Provide the equation used to calculate that distance *(Include definitions of all variables, identify the values used for the clarification, and include citation):*
A mass balance calculation of the effluent at 615 mg/L and 5 cfs (3.23 MGD) and the Bark River flow at 59 mg/L to meet a total flow at the 395 mg/L chronic toxicity criterion generates an estimated 7Q10 of 3.3 cfs. This assumes mixing with the full 7Q10 river flow since the location is downstream of the treatment plant outfall. 7Q10 low flow at Rome is 5.4 cfs, which is about ten miles downstream of the outfall. With no other major tributaries meeting the Bark River over that distance, interpolation estimates that the 7Q10 is 3.3 cfs about four miles below the outfall.

G. What are the designated nses associated with the direct receiving waterbody, and the designated uses for any downstream waterbodies until the water quality standard is met?
Bark River – Warm Water Sport Fishery.

H. Identify all other variance permittees for the same substance which discharge to the same stream, river, or waterbody in a location where the effects of the combined variances would have an additive effect on the waterbody: None, there are no other point source surface water discharges in this vicinity with specific WPDES permits.

I. Please attach a map, photographs, or a simple schematic showing the location of the discharge point as well as all variances for the substance currently draining to this waterbody on a separate sheet Drafter

J. Is the receiving waterbody on the CWA 303(d) list? If yes, please list the impairments below. ☒ Yes ☐ No ☐ Unknown

River Mile	Pollutant	Impairment
Bark River- Mile 35.00-41.00	Total Phosphorus	Low DO

K. Please list any contributors to the POTW in the following categories:

Food processors (cheese, vegetables, meat, pickles, soy sauce, etc.)	N/A
Metal Plating/Metal Finishing	N/A
Car Washes	**Soft Touch Car Wash & Detail**, 2325 Sun Valley Dr., Delafield, WI 53018 **Nantilus Car Wash**, 700 Hartbrook Drive, Hartland, WI 53029 **Anto Wash**, 400 Industrial Drive, Hartland, WI 53029
Municipal Maintenance Sheds (salt storage, truck washing, etc.)	All five of Delafield Hartland's municipalities have salt storage facilities and the City of Delafield, Village of Hartland, and Town of Delafield have wash bays.
Laundromats	**Sun Laundry,** 515 Cottonwood, Hartland, WI 53029
Other presumed commercial or industrial chloride contributors to the POTW	Triad Industries closed in 2011, the business was sold at auction to Medline Inc. that will start up production in the first quarter of 2015.

Section IV: Pretreatment (complete this section only for POTWs with DNR-Approved Pretreatment Programs. See w:\Variances\Templates and Guidance\Pretreatment Programs.docx)

A. Are there any indnstrial users contribnting chloride to the POTW? If so, please list.
N/A

B. Are all industrial users in compliance with local pretreatment limits for chloride? If not, please include a list of industrial users that are not complying with local limits and include any relevant correspondence between the POTW and the industry (NOVs, industrial SRM updates and timeframe, etc)
N/A

C. When were local pretreatment limits for chloride last calculated?
N/A

D. Please provide information on specific SRM activities that will be implemented during the permit term to reduce the industry's discharge of the variance pollutant to the POTW
N/A

Section V: Public Notice

A. Has a public notice been given for this proposed variance? ☒ Yes ☐ No

B. If yes, was a public hearing held as well? ☐ Yes ☐ No ☒ N/A

C. What type of notice was given? ☒ Notice of variance included in notice for permit ☐ Separate notice of variance

D. Date of public notice: October 16, 2014 **Date of hearing:** N/A

E. Were comments received from the public in regards to this notice or hearing? *(If yes, please attach on a separate sheet)* ☐ Yes ☒ No

Section VI: Human Health

A. Is the receiving water designated as a Public Water Supply? ☐ Yes ☒ No

B. Applicable criteria affected by variance: No human health criteria are available for chloride in Wisconsin waters.

C. Identify any expected impacts that the variance may have upon human health, and include any citations:
None

Section VII: Aquatic Life and Environmental Impact

A. Aquatic life use designation of receiving water: Warm water sport fish community

B. Applicable criteria affected by variance: Chronic toxicity criterion for chloride is 395 mg/L from ch. NR105, applicable in all Wisconsin waters regardless of use designation.

C. Identify any environmental impacts to aquatic life expected to occur with this variance, and include any citations:
Estimated instream concentration at the outfall is equal to 564 mg/L based on a mass balance of 3.23 MGD (5 cfs) at the 615 mg/L variance limit and ¼ of 7Q10 (2 cfs/4) at 59 mg/L. This concentration exceeds the 395 mg/L criterion. The instream concentration at the proposed interim limit exceeds the genus mean chronic value for *Ceriodaphnia* (471 mg/L), but exceeds chronic values for no other species.

D. List any Endangered or Threatened species known or likely to occur within the affected area, and include any citations: None that would affect the water quality criterion, as the chronic toxicity criterion for chloride is more stringent than all genus mean chronic values for organisms with chloride toxicity data. As a result, no endangered species with data would need more protection than already provided by the existing criterion.

Citation: U.S. Fish & Wildlife Service – Environmental Conservation Online System (http://www.fws.gov/endangered/) and National Heritage Index (http://dnr.wi.gov/topic/nhi/)

Section VIII: Economic Impact and Feasibility

A. What modifications would be necessary to comply with the current limits? Include any citations.
Installation of Reverse Osmosis (RO) will be needed to comply with the WQBEL of 466 mg/L (CTC based).

B. How long would it take to implement these changes?
Not sure. Depends on availability of funds.

C. Estimate the capital cost *(Citation)*: $3,633,750

D. Estimate additional O & M cost *(Citation)*: $1,178,950

E. Estimate the impact of treatment on the effluent substance concentration, and include any citations:
Treatment with RO will likely reduce chloride to the WQBEL 466 mg/L.

F. Identify any expected environmental impacts that would result from further treatment, and include any citations:
There would be some impacts based on disposal of brine from RO. These include air pollution impacts from trucking brine and increased chloride impacts at the point where brine is discharged.

G. Is it technically and economically feasible for this permittee to modify the treatment process to reduce the level of the substance iu the discharge? *(Provide the basis for this conclusion, including citations. If treatment is technically infeasible, provide an analysis of the factors that demonstrates technical infeasibility. If treatment is economically infeasible, provide an analysis of the economic cost to ratepayers that demonstrate economic infeasibility. Attach additional sheets if necessary.)* ☐ Yes ☒ No ☐ Unknown

It is not economically feasible for this permittee to modify the treatment process because of the limited funds available to them. Instead, they plan to evaluate sewer use ordinances and add additional provisions in the ordinances in order to stimulate water softening initiatives in residences and industry. Installation of RO would result in a sewer rate of 2.00% of median household income.

H. If treatment is possible, is it possible to comply with the limits ou the substance? ☒ Yes ☐ No ☐ Unknown

I. If yes, what prevents this from being doue? Include any citations.

End of pipe Reverse Osmosis (RO) treatment could reduce effluent chloride concentrations to chronic toxicity criterion; however, attaining the applicable water quality standards specified in chs. NR 102 to 105 may cause substantial and widespread adverse social and economic impacts in the area where the discharger is located.

J. List any alternatives to current practices that have been considered, and why they have been rejected as a course of action, including any citations:

Reverse Osmosis (RO) – not economically feasible.

Section IX: Compliance with Water Quality Standards

A. Describe all activities that have been, and are being, conducted to reduce the discharge of the substance into the receiving stream. This may include existing treatments and controls, consumer education, promising centralized ore remote treatment technologies, planned research, etc. Include any citations.

- Conducting public information on the need for water softener efficiency, working with contributing communities on means for efficiently disseminating the information to users of water softeners.
- Developed and implemented a plan to conduct collection system monitoring in order to characterize chloride contributions (concentrations and loadings) from contributing communities.
- Required the only industrial contributor to reduce chloride discharge, which was subsequently reduced from an average of 1100 mg/L to 625 mg/L. The industry has since closed (relocated)
- Tracking mass of chloride in the effluent. The recommended means of determining mass is concentration of daily sample X daily flow X 8.34.

B. Describe all actions that the permit requires the permittee to complete during the variance period to ensure reasonable progress towards attainment of the water quality standard. Include any citations.

1) Amend Delafield-Hartland's wastewater facility's sewer use ordinance to require high efficiency demand initiated regeneration (DIR) type softeners for both newly installed and replacement softeners for residences, commercial and industrial businesses. Although the Department of Commerce has revised the plumbing code to require DIR softeners for both new and construction replacements [Admin Rule at Comm 82.40(8)(j)], requiring it in a revised SUO will provide additional enforcement mechanism.

2) Evaluate the imposition of installation restrictions so that outside hose bibs for gardening, etc. are on unsoftened water. If restrictions are imposed, new homes and those that are replacing water softeners should be required to have plumbing restrictions for hard water by-passes, and the requirement should apply to self-installed equipment as well. Request voluntary support from local water softening businesses and licensed installers in this regard. In order to reduce baseline chloride levels at the plant.

3) Investigate the possibility of brine leaching or being washed to the plant via run-off from the five municipalities' salt storage facilities and wash bays. Investigate also the structural conditions of all sewer manholes located close to these salt storage facilities. Work with these communities in finding ways to reduce possible salt migration into the sewer system from the salt storage facilities and during road deicing operation. Include in the Progress Reports, the outcome of these investigations and follow-up actions implemented or planned. The operator indicated all five contributing municipalities have salt storage facilities. The Department has found out that salt storage facilities and truck washing could be significant chloride contributors to WWTFs.

4) Require the upcoming industry to evaluate its process and operation with regard to chloride discharge. This evaluation should include softened water requirements and optimization of softener operation; chemicals used

in its operation; and any other potential measures to reduce chloride discharge to the minimum possible - not to exceed 400 mg/L. Track chloride and flow as soon as production starts. Triad Industry, which had consistently discharged very high levels of chloride (sometimes averaging 1100 mg/L) to the Dela-Hart facility, closed in 2011, when the industry was sold. But the buyer plans to start a new industry early in 2015. Every measure must quickly be taken to ensure chloride discharge is limited.

5) Evaluate chloride discharges from schools, hospitals, commercial institutions and other large water users, including laundromats and car washes. Require high chloride contributors to implement measures to ensure implementation of all feasible strategies to reduce chloride discharge. Strategies should include hiring qualified professionals to inspect, calibrate, and/or replace water softening units. Include discussions on these efforts and proposed follow-up actions in required chloride reports. In order to reduce baseline chloride levels at the plant.

6) Identify areas in the collection system, including all contributing communities that may be experiencing high infiltration and inflow. Implement and/or require implementation of measures to address potential I/I problems. Although no evidence of significant I/I has been found in the Delafield-Hartland collection system including all contributing communities, tracking of potential I/I problems and timely implementation of necessary measures to address faulty sewre pipes, failing manhole covers, and bad lateral connections in all areas of the collection system will serve to keep plant clear water to the minimum and reduce baseline chloride load.

7) Continue to educate the public about softener efficiency and chloride reductions. Over the years, plant staff have done a good job of educating the public about chloride and softener efficiency through articles on websites and public discussions (see chloride reports). Continuation of this effort will serve to reduce baseline chloride levels.

Section X: Compliance with Previous Permit *(Variance Reissuances Only)*

A. Date of previous submittal: Drafter **Date of EPA Approval:** N/A

B. Previous Permit #: WI-0032026-07-0 **Previous WQSTS #:** (EPA USE ONLY)

C. Effluent substance concentration: 538 mg/L (4-day P99) **Variance Limit:** 640 mg/L

D. Target Value(s): 500 mg/L **Achieved?** ☐ Yes ☒ No ☐ Partial

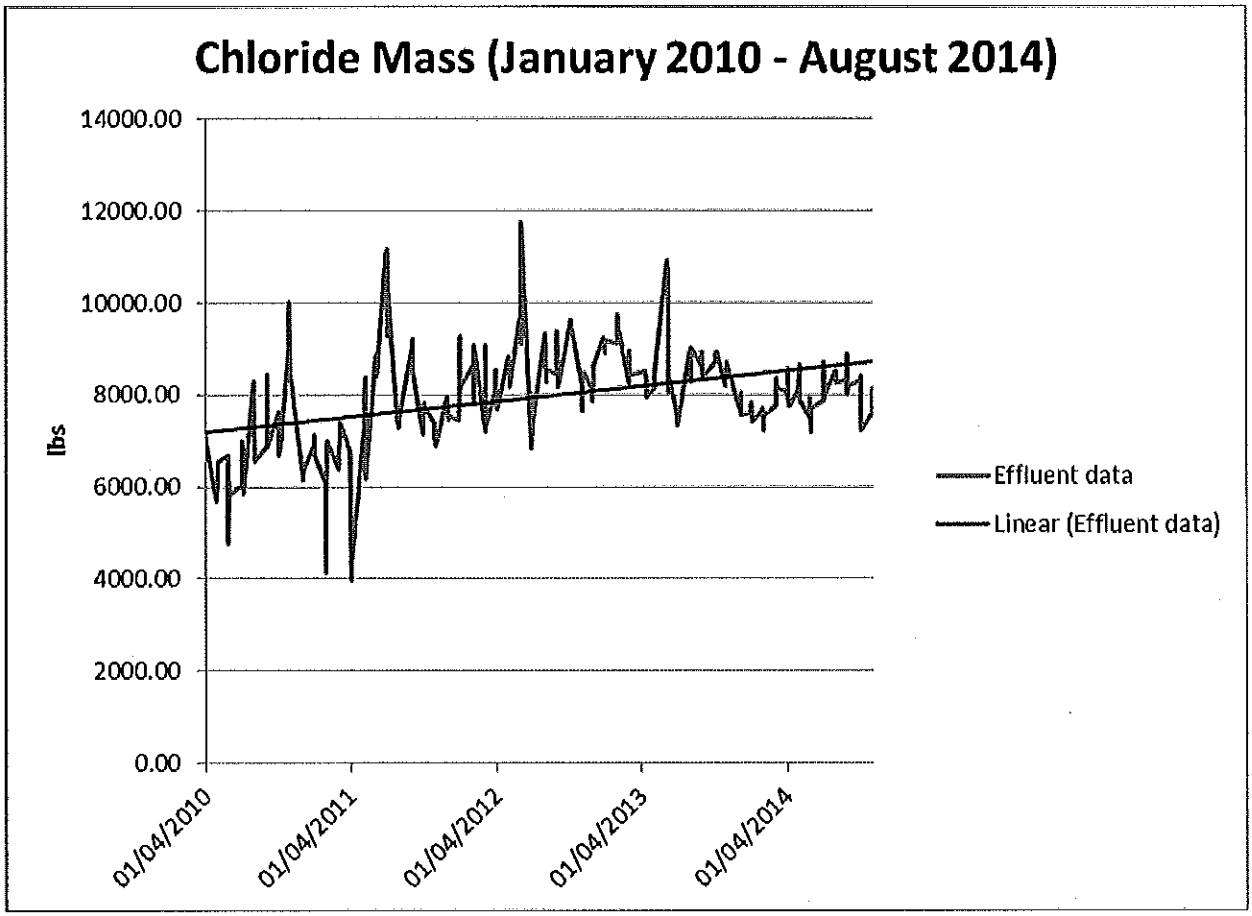
E. For renewals, list previous steps that were to be completed. Show whether these steps have been completed in compliance with the terms of the previous variance permit. Attach additional sheets if necessary.

Condition of Previous Variance	Compliance
Educate homeowners on the impact of chloride from residential softeners; discuss options available for increasing softener salt efficiency, and request voluntary reductions. Distribute information on the efficient use of home softeners. This effort can be made more effective through mailings with sewer bills and advertisement in local newspapers.	☒ Yes ☐ No
Recommend residential softener tune-ups on a voluntary basis	☒ Yes ☐ No
Request voluntary support from local water softening businesses and possibly building inspectors in the efforts described above and the use of high efficiency softeners and providing hard water for outside faucets for all new residential developments.	☒ Yes ☐ No
Request chloride reductions from identified commercial and industrial contributors. Ask for support in optimizing the use of softeners and good housekeeping practices	☒ Yes ☐ No

Trend data for Chloride
Delafield-Hartland Pollution Control Commission POTW

Data: January 1, 2010 – August 31, 2014

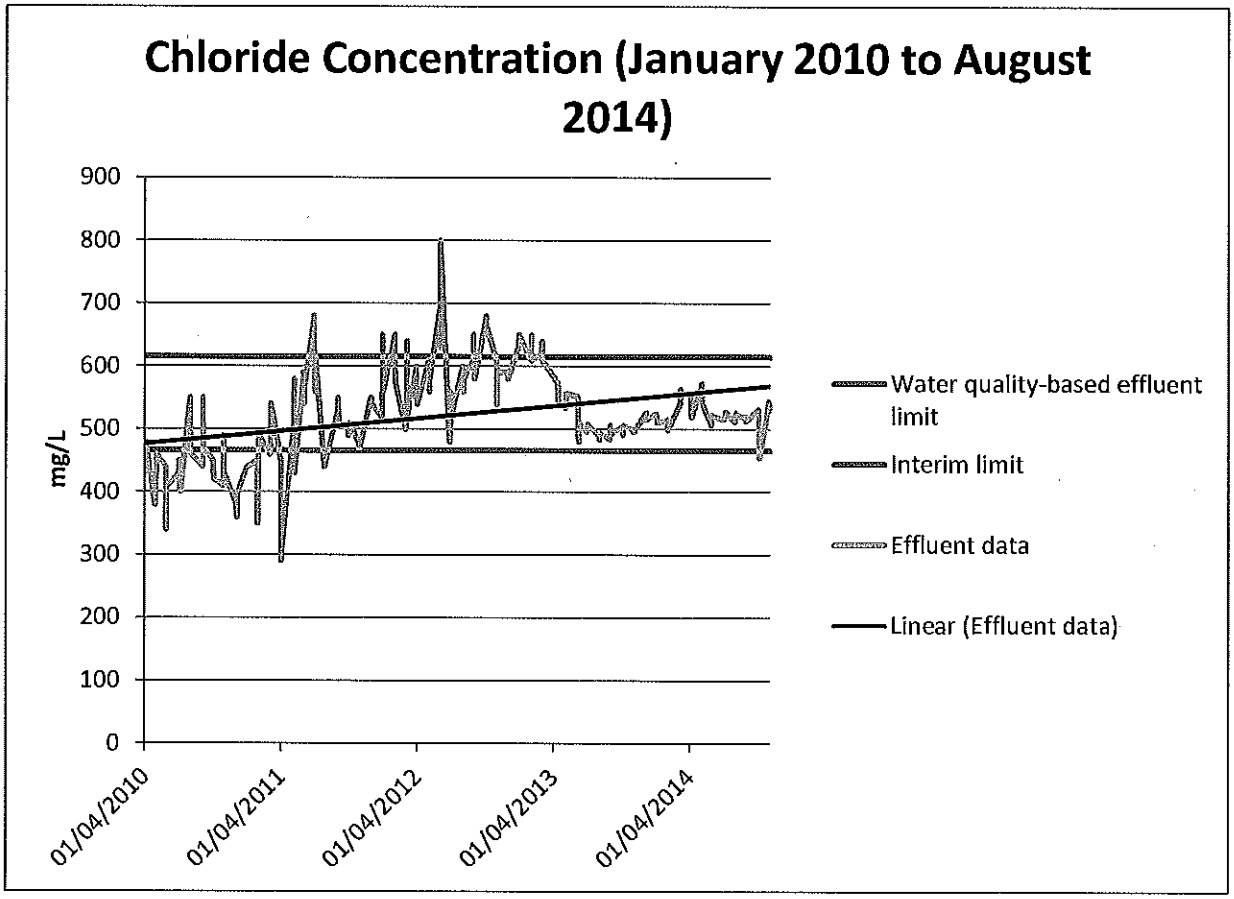
Calculate Effluent Mass



Trend data for Chloride
Delafield-Hartland Pollution Control Commission POTW

Summary:
The trends in Chloride data for Delafield-Hartland Pollution Control Commission are presented in the four following graphs. The first two graphs represent data from January 2010 to August 2014. The trend line for both chloride concentration and mass suggest an upward trend in the chloride effluent data. However, in the last two graphs the data from 2010 was not taken into consideration. The graphs represent data collected between August 2011 and August 2014 and show a downward trend in the chloride effluent data. The last two graphs are more likely representative of the current conditions as there was greater variability and a spike in chloride concentrations between 2010 and 2012. Chloride concentrations have been more consistent between January 2013 and August 2014.

Data: January 1, 2010 – August 31, 2014
Effluent Concentration Data

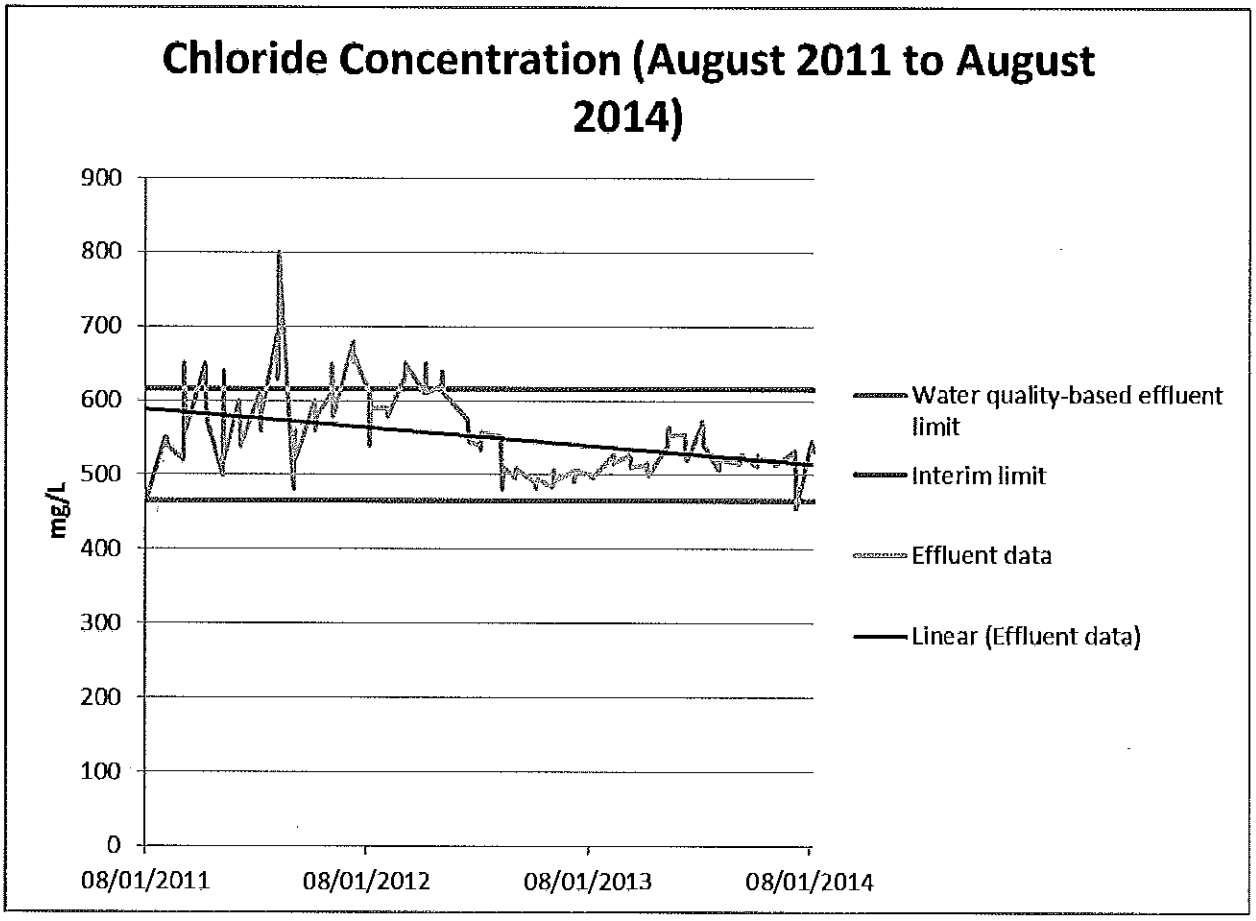


Water Quality-based effluent limit = 466 mg/L
Interim Limit = 615 mg/L

Trend data for Chloride
Delafield-Hartland Pollution Control Commission POTW

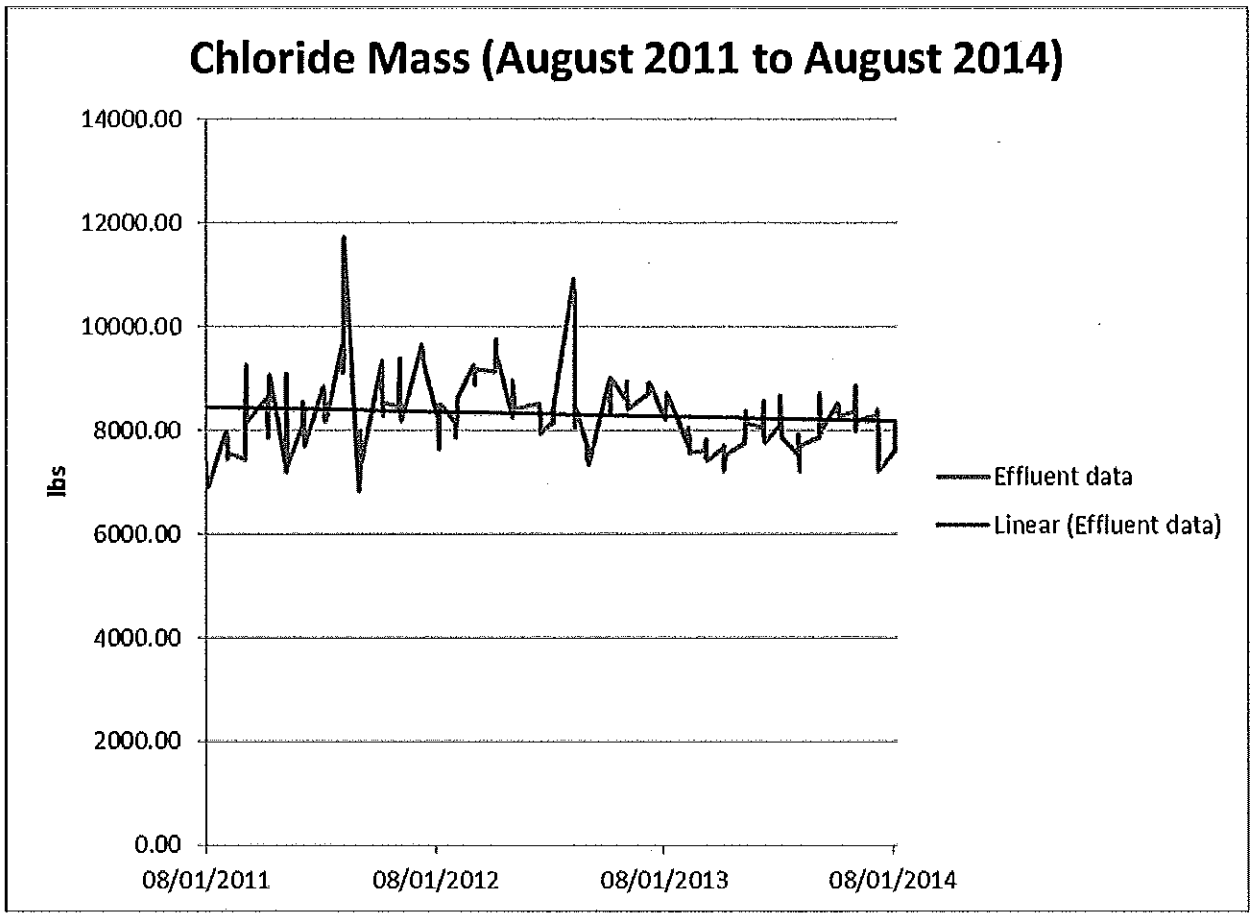
Data: August 1, 2011 – August 31, 2014

Effluent Concentration



Water Quality-based effluent limit = 466 mg/L
Interim Limit = 615 mg/L

Trend data for Chloride
Delafield-Hartland Pollution Control Commission POTW

Data: January 1, 2010 – August 31, 2014

Calculate Effluent Mass