UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

February 27, 2024

Bruce Thompson
de maximis, inc.

Re: EPA approval of the *Effluent Discharge Criteria* memo, dated February 13, 2024, for the Nuclear Metals, Inc. Superfund Site located in Concord, Massachusetts

Dear Mr. Thompson:

EPA, in consultation with its contractor, AECOM, and the Massachusetts Department of Environmental Protection, has completed its review of the *Effluent Discharge Criteria* memo, ("the Memo") dated February 13, 2024. The Memo is subject to the terms and conditions specified in the Consent Decree (CD) for Remedial Design / Remedial Action (RD/RA) for the Nuclear Metals Inc. Site, which has an effective date of December 6, 2019.

The Memo was revised in response to EPA comments dated January 4, 2024. EPA reviewed the revisions to the Memo and finds that they are acceptable. Therefore, EPA approves the Memo.

If there is any conflict between the Performance Standards as stated in the Work Plan and the Performance Standards as stated in the CD and statement of work (SOW), the CD and SOW shall control.

Please do not hesitate to contact me at nierenberg.kara@epa.gov or (617) 918-1435 should you have any questions in this regard.

Sincerely,

Kara Nierenberg
Remedial Project Manager

cc:
Garry Waldeck, MassDEP
Andrew Schkuta, AECOM
Todd Majer, de maximis
Christine Taddonio, de maximis
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February 13, 2024

Ms. Kara Nierenberg Remedial Project Manager
EPA Region 1
5 Post Office Square, Suite
100 Mail Code OSRR 07-4
Boston, MA 02109-3912

Subject: Nuclear Metals, Inc. Site, Concord, Massachusetts
Remedial Design / Remedial Action
Effluent Discharge Criteria

Dear Ms. Nierenberg:

Pursuant to Paragraph 5.1 of Appendix B of the Consent Decree (CD) (Civil Action No. 1:19-cv- 12097-RGS) for the Remedial Design / Remedial Action (RD/RA) for the above referenced Site, enclosed please find revised effluent criteria for discharge of treated groundwater to surface water at the Site.

Responses to EPA's January 4, 2024 comments are attached.

Please contact me if you have any questions,

Sincerely,

Bruce Thompson
Project Coordinator

Enclosure

cc: Garry Waldeck, MassDEP
Settling Defendants

Responses to EPA comments dated January 4, 2024

1. Section 5, Page 12, Paragraph 2. The text refers to Contract Laboratory Program (CLP) methods where it should refer to the SW846 compendium of methods. The Contract Laboratory Program is a network of commercial laboratories contracted and managed directly by EPA Headquarters to support Superfund, that analyzes samples following a very prescriptive Statement of Work (currently SFAM01.1) and is only available to EPA and its contractors. The NMI QAPP refers to CLP-like reporting that will be performed. Please edit the text as necessary.

Response: Text edited as requested.

2. Section 2, Page 4, Paragraph 8. Please edit the text to define the term "WQBELs".

Response: "Water Quality Based Effluent Limits" added to define "WQBELs".

3. Site Specific Effluent Limits Table. Site COCs thorium and molybdenum are included in this table since ROD Table L-1 includes clean-up levels for these COCs; however, there are no effluent limits proposed for either pollutant. Please revise the table to either include an effluent limit or add a note explaining the reasoning for not including a limit for each pollutant.

Response: No surface water criteria were identified for either thorium or molybdenum. Review of the available data does not show defined "plumes" of either thorium or molybdenum in groundwater. A note has been added to the table to indicate that these constituents will be "monitor only". If influent monitoring indicates noteworthy levels (i.e., sustained influent concentrations > 5x the cleanup level) of either constituent, the need for effluent criteria will be revisited.

1. Introduction

The purpose of this evaluation is to establish "permit equivalency" limits for discharge of treated groundwater or surface water to surface water during the Remedial Action at the Nuclear Metals, Inc. Site. Treatment and discharge will apply to the following sources:

- Knox Trail System (originally EW-1, now adding EW-2 and BEW-5)
- On-site Bedrock Pre-Design Investigation (PDI) System (BEW-2, BEW-3, and BEW-4)
- Temporary systems – well development/pump testing, construction dewatering (Cooling Water Pond and/or Bog excavation)

The Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) program is an action-specific "applicable or relevant and appropriate requirement" (ARAR) in the Record of Decision (ROD). The ROD states that any discharges to surface waters will meet the substantive discharge standards, including those established under 314 CMR 3.00 and 4.00.

2. Regulatory Background

EPA's policy with respect to attaining permits for activities at Superfund Sites is provided in "Permits and Permit 'Equivalency' Processes for CERCLA On-site Response Actions," OSWER Directive 9355.7-03, February 1992. The Background section of this guidance points to EPA's "CERCLA Compliance with Other Laws Manual," EPA/540/G-89/006, August 1988 for the definitions of "substantive" and "administrative". For on-site discharges from a CERCLA site, the substantive requirements must be identified and complied with, even though an NPDES permit will not be obtained.

Section 3.1.2 of "CERCLA Compliance with Other Laws Manual" states that "Relevant substantive requirements include Technology-Based Standards defined by Best Conventional Technology and for toxic and nonconventional pollutants, Best Available Technology Economically Available (BCT/BAT). Where effluent guidelines for a specific industry or industrial category do not exist, e.g., CERCLA sites, BCT/BAT technology-based treatment requirements are determined on a case-by-case basis using best professional judgment (BPJ). Once the BPJ determination is made, the numerical effluent discharge limits are derived by applying the levels of performance of a treatment technology to the wastewater discharge." Water Quality Criteria and Standards are also applicable.

Section 3.2.3 states "Both on-site and off-site discharges from CERCLA sites to surface waters are required to meet the substantive CWA NPDES requirements, including discharge limitations, monitoring requirements, and best management practices."

The EPA Region 1 NDPES program is provided in the Dewatering and Remediation General Permit (DRGP). Section 1.3.10 of the DRGP notes that remediation or dewatering discharges resulting from on-site response action conducted pursuant to §§104, 106, 120, 121 or 122 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or discharges that may lead to recontamination of aquatic media at such sites are ineligible for coverage under the DRGP. While the DGRP is not directly applicable, as no permit will be issued, it does provide substantive requirements, including:

Section 3.1.1.2 addresses Discharge Monitoring Locations, noting that treated effluent samples shall be taken at a consistent point defined by geographic coordinates (i.e., latitude and longitude), following all treatment and immediately prior to discharge to the receiving water, private or municipal separate storm sewer system.

Section 3.1.3.1 addresses Treatment System Monitoring Requirements at Discharge Initiation, and states:

"1) During the first week of discharge, operators must sample the wastewater and discharge two times: one sample of the wastewater and one sample of the discharge must be collected on the first day of the discharge; and one sample of the wastewater and one sample of the discharge must be collected on one additional non-consecutive day within the first week of discharge;

2) During the first week of discharge, samples must be analyzed in accordance with 40 CFR §136 unless otherwise specified in the DRGP with a rushed turnaround time and results must be reviewed no more than one business day from receipt of the results of each sampling event. After the first week, samples may be analyzed with a standard turnaround time and results must be reviewed no more than 72 hours from receipt of the results;

3) If the treatment system is operating as designed and achieving the limitations in the DRGP, sampling of the wastewater shall be discontinued; and sampling of the discharge shall be as follows, thereafter: 1) 1/Month for the remaining term of the permit."

Section 3.1.3.2 addresses Corrective Action, and states: "If the treatment system is shut down during startup or interrupted as a result of a problem including when discharge concentrations for any parameter exceeds the limitations, corrective actions must be taken, and as follows:

1) Upon re-initiation of discharge, the operator shall collect one sample with a rushed turnaround time and results must be reviewed no more than one business day from receipt of the results of the sampling event;

2) If the problem requiring corrective action has been corrected, the operator may resume with routine monitoring requirements;

3) If the problem persists, the operator must immediately halt discharges and notify EPA via telephone, e-mail or other verbal or written means within 24 hours of the need to cease discharge; discharge may resume upon completion of corrective actions as directed by the EPA contact."

Section 3.1.4.3 addresses Short-Term Discharge Monitoring Requirements, stating that "for discharges, the operator must take one sample of the discharge during the first 10% of discharge. If at any time inspection (i.e., field measurement, visual observation) demonstrates that the discharge does not meet the limitations and requirements in the DRGP, corrective action must be taken."

Section 3.1.5 addresses Test Methods and requires "sufficiently sensitive" test procedures (i.e., methods). In accordance with 40 CFR § 122.44(i)(1)(iv), all samples shall be tested according to sufficiently sensitive test procedures (i.e., methods) using the analytical methods found in 40 CFR §136, or alternative test methods approved by EPA, in accordance with the procedures in 40 CFR §136, unless specifically prohibited or authorized for use by the permitting authority in the DRGP. See Appendix I for more information.

A method is "sufficiently sensitive" when:

1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or

2) The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter.

Appendix I - Sufficiently Sensitive Test Methods, Section 5 - Selected Definitions, states that "Test methods 8260 and 8270 cannot be used for the purposes of analysis under this general permit unless approved for use in accordance with 40 CFR Part 136.5. Specific preparation methods may be required. Selected Ion Monitoring is a test method modification allowed in 40 CFR Part 136.6 and is recommended for analysis of volatile and semi-volatile organic compounds when necessary."

EPA Region 1 DRGP- 2022 Fact Sheet addresses dilution factors and defines "known present" and "known absent" or "believed absent" with respect to regulated discharge parameters.

Section 3.5 of the Fact Sheet addresses "Critical Low Flow and Calculation of a Dilution Factor", stating that "Available dilution may be used to determine water quality-based limitations in this general permit for parameters, when Water Quality Based Effluent Limits (WQBELs) apply. The available dilution at a specified critical low flow condition in the receiving water and the permitted maximum effluent flow (i.e., design flow) are used in calculating the dilution factors."

Section 4.3.1.1 of the Fact Sheet states, "known", when used in reference to parameters, refers to any parameter that has been quantified in an environmental sample collected at a site. This includes groundwater, surface water and soil/sediment samples. An applicant that indicates a given parameter is "known present" at a site must disclose a minimum of one prior sample result in water, when available. As a result, the limitations for only the known parameters, rather than the limitations for all parameters included in this general permit will typically apply. EPA expects this change to reduce the regulatory burden for a proportion of dewatering and remediation sites covered by this general permit."

Section 4.3.1.2 of the Fact Sheet states, ""known absent", when used in in reference to parameters, refers to any site where a parameter has been sampled in an environmental sample collected at that site, and is non-detect. "Believed absent" may refer to either an instance where a parameter is not associated with any past site use history, including filling, or has been quantified at a site but such data do not meet minimum data validation requirements."

3. Groundwater Treatment Systems

3.1 Groundwater Non-Time-Critical Removal Action / Knox Trail Treatment System

Ex-situ treatment of groundwater at the NMI Site started in 2017 during the Groundwater Non-Time-Critical Removal Action (NTCRA) (Groundwater NTCRA Construction Completion and Final Report (de maximis, inc., May 2020). The Groundwater NTCRA objective was to hydraulically capture the 1,4-dioxane and volatile organic compound (VOC) plume in groundwater in the area downgradient of the 2229 Main Street property and subsequently treat the extracted groundwater for 1,4-dioxane and VOCs using "Best Demonstrated" and "Best Available" Technologies (BDT/BAT). A treatability study was performed to identify the BDT/BAT, which identified a sodium persulfate based Advanced Oxidation Process (AOP) to be the most suitable technology for destruction of 1,4-dioxane and VOCs.

A temporary treatment system was implemented to initiate plume containment while the technology for the permanent treatment system was evaluated, selected, designed, procured, and installed. The temporary system started operating on May 23, 2017, and provided containment of the plume until startup of the final treatment system in April 2019. The temporary treatment used bag filters and granular activated carbon (GAC) adsorption (equipment repurposed from the Building NTCRA), with the addition of a pH adjustment step prior to discharge to the Assabet River.

The Temporary Treatment System adopted the Remediation General Permit (RGP) levels as "permit equivalency" discharge limits. GAC provided adequate treatment of TCE and 1,1-DCE to meet RGP limits. The influent concentration of 1,4-dioxane at the time the temporary system started operating was 17 µg/L, well below the 200 µg/L RGP limit, so 1,4-dioxane was a "monitor only" parameter for the temporary system.

3.1.1 Treatability Study

The ROD established cleanup criteria for groundwater but did not address discharge limits for ex-situ groundwater treatment. The 1990 revised National Contingency Plan (see 55 FR 8721) establishes a guideline that treatment as part of CERCLA remedies should generally achieve reductions of 90 to 99 percent in the concentration or mobility of individual contaminants of concern (COCs). EPA's Guidance on Conducting Treatability Studies (EPA 540-R-92-071a, October 1992) states that "if no cleanup criteria have been established for the site, a 90 percent reduction in the contaminant concentrations will generally be an appropriate performance goal".

The Knox Trail treatment system design is based on the Treatability Study, with key criteria that include the following:

- Remove metals (primarily iron and manganese) to protect reaction chambers,
- Remove VOCs to meet RGP discharge limits for VOCs,
- Remove at least 95% of 1,4-dioxane, measured as an annual average,
- Raise the pH of the effluent water to between 6.9 and 7.9 standard units, and
- Allow for adequate treatment flow rate, including potential to add extraction wells, to system. Assume up to 30 gallons per minute (gpm) total (for potential future expansion) and a nominal, constant, flow rate of 20 gpm.

These performance-based requirements resulted in a series of unit processes to meet the criteria that include:

- Iron and manganese pre-treatment. This step uses triplex filters containing DMI-65 media. Sodium hypochlorite is added to the influent to aid in precipitation and removal within the DMI-65 media. Bag filtration follows to remove any suspended solids in the DMI-65 effluent. A backwash system is used to periodically remove suspended solids from the DMI-65 media. Those solids are thickened and sent to a filter press, and the filter cake is collected for off-site disposal.
- 1,4-dioxane and VOCs are removed using the Vanox™ AOP. This AOP step consists of 6 reactor vessels, each containing a medium-pressure UV lamp. An oxidant is mixed into the influent water and activated by UV light, generating a variety of reactive species that destroy the organic compounds.
- pH adjustment prior to discharge to Assabet River.
- Liquid GAC to absorb any residual chlorine (associated with the sodium hypochlorite used in the metals pre-treatment process).
- An ion-exchange system was installed, based on the potential to create perchlorate from reaction of the oxidant with other compounds in the influent water.

For 1,4-dioxane the 100% RD proposed a target annual average removal rate of greater than or equal to 95%. At the point in time when this limit was proposed, extracted water was ~10 µg/L 1,4-dioxane. 95% removal would result in an effluent concentration of 0.5 µg/L, above the laboratory Reporting Limit (RL) of ~0.144 µg/L.

3.2 Remedial Design Water Treatment

A variety of ex-situ treatments of groundwater with discharge to surface water were conducted or are contemplated as part of the remedial action. As summarized below, the treatment approach has been tailored to the constituents of concern at the various points of extraction.

3.2.1 October 27, 2020 PDI Water Treatment and Disposal Approach

This letter proposed a modification to the RDWP to allow treatment of on-site discharge. The RDWP specified treatment to consist of on-site filtration and pretreatment using ionic resin to remove uranium, then off-site disposal.

The proposed revised treatment includes treating the produced water with the same treatment processes (i.e., filtration and resin), and adding GAC to remove 1,4-dioxane and VOCs. Treatment would be followed by on-site discharge of the water, eliminating the need to transport and dispose of the produced water off-site.

The proposed treatment approach for groundwater removed from bedrock and overburden would consist of (in order) the processes listed below. Groundwater extraction rates from pumping wells may be up to 20 gpm. However, it is desirable to treat water in batches (e.g., during daylight hours); therefore, the treatment system has been designed to be capable of up to 40 gpm (i.e., a 50% duty cycle).

Process	Purpose	Notes
Weir Tank	Solids removal	Settling of sand/silt
Primary Frac-Tank (min. 20,000 gallons)	Storage/surge	Volume to allow treatment to operate in batch mode1
Treatment Steps		
Mechanical Filtration	Solids removal	Minimum of two bag filters in a lead-lag configuration
Ionic Resin	Uranium removal	Two 30 ft3 vessels of Evoqua A- 284 anionic resin configured in lead-lag
Granular Activated Carbon	1,4-dioxane and VOC removal	Three vessels of GAC, each 3,000-lb2, configured in series of a lead/lag vessels with one spare on site for changeout
Secondary Frac-Tank(s) (min. 20,000 gallons)	Storage/surge	Volume to allow time for confirmatory testing. Discharge would be in batch mode.
Discharge	To Cooling Water Pond for BEW-1 through BEW-4.	The Cooling Water pond is upgradient of the 1,4-dioxane plume and the most practical discharge location at the site for treated water.

Process	Purpose	Notes
	Testing at BEW-5 and BEW-6 will discharge to the Assabet River	The Assabet River is the most logical discharge location for BEW-5 and 6, and already receives treated water from EW-1.

3.2.2 June 21, 2021 Alternative Water Treatment and Discharge Location

This memorandum proposed a revised treatment approach for BEW-5 and BEW-6 pump test water, as these locations did not require treatment of uranium. It includes treating extracted water with a similar treatment process consisting of pre-filtration (bag filters) and GAC for treatment of 1,4-dioxane and VOCs to below the 1,4-dioxane specific cleanup criteria of 0.46 ug/L. Treatment would be followed by discharge of the water to the Assabet River.

The notable difference in this treatment system is the exclusion of the uranium treatment and uranium sampling required during treatment of the water generated from on-site drilling activities. In addition to removal of the uranium vessel, use of a weir tank as an influent break tank/ pre-filtration is not considered necessary. Weir tanks are needed to assist in sediment drop out and was necessary in the past to remove fine particulates from the wasted drilling fluids. BEW-5 and BEW-6 development and step testing have indicated minimal suspended solids, of which the bag filters are expected to suffice. The proposed treatment approach for groundwater removed from bedrock and overburden would consist of (in order) the processes listed below:

Groundwater extraction rates from pumping wells is expected to be <3 gpm. However, because the treatment system is designed to treat at 40 gpm, the extracted groundwater will be treated in “batches” and containerized into two “clean” Frac-tanks where it will be held until sampling results are received.

Process	Purpose	Notes
Primary Frac-Tank (min. 20,000 gallons)	Storage/surge/settling of trace suspended solids	Volume to allow treatment to operate in batch mode
Treatment Steps		
Mechanical Filtration	Solids removal	Minimum of two bag filters in a lead-lag configuration
Granular Activated Carbon	1,4-dioxane and VOC removal	Three vessels of GAC, each 3,000-lb[2], configured in series of a lead/lag vessels with one spare on site for changeout

Secondary Frac-Tank(s) (min. 20,000 gallons)	Storage/surge	Volume to allow time for confirmatory testing. Discharge would be in batch mode.
Discharge	To Assabet River, utilizing temporary hosing	Considering adequate treatment, discharge to the Assabet River is the most logical discharge pathway.

3.2.3 June 24, 2021 Temporary Bedrock Groundwater Pumping and Treatment

This memorandum addressed ex-situ treatment of groundwater during the four on-property bedrock extraction wells (BEWs 1-4) during the Fall 2021 PDI pumping study. Extracted water was transmitted through aboveground piping and discharged into a 5,000-gallon weir tank. Water from the weir tank was then pumped, in series, through the following treatment processes which were housed within a fabric structure/enclosure:

- Two bag filters in a lead-lag configuration,
- Two ion-specific resin vessels for removal of uranium,
- An advanced oxidation (HiPOx) system rented from APT Water for destruction of VOCs and 1,4-dioxane,
- Two activated carbon vessels in a lead-lag configuration, and
- An equalization tank.

Treated groundwater was then discharged into the on-site cooling water pond. As noted above, the temporary treatment system treated over a million gallons of bedrock groundwater during the fall of 2021 and consistently achieved concentrations of COCs in effluent that were below cleanup levels.

3.2.4 June 13, 2022 Pre-Design Investigation Bedrock Groundwater Pump & Treat System Work Plan

This PDIWP WP presents the design for the bedrock PDI P&T system which has been designed, based on the success of the temporary system, to capture and treat bedrock groundwater containing the same COCs. Like the temporary treatment system, the Bedrock P&T system will pump groundwater from up to four bedrock extraction wells (BEWs) and treat it using resin and advanced oxidation, but unlike the temporary treatment system, system described in this PDIWP is designed to operate continuously for multiple years.

Groundwater pumped from the BEWs will travel through subsurface piping to a new treatment building. At this new building (see details in Section 3.2.2), the groundwater will be metered and controlled by passing through gauges, meters and valves installed as part of an inlet manifold and will then discharge into a 2,000-gallon conical equalization tank. Sand, grit, or large floc in the extracted water will settle and collect in the bottom of the conical tank where it can be removed (if needed). Groundwater in the conical tank will be pumped, in series, through the treatment processes listed below to remove COCs. These are the same processes (and the same equipment in several cases) as used for the temporary treatment system. The treatment system is designed for an expected flow of up to 20 gpm, although there is flexibility to adjust flow by about +/-30 percent (%).

Step	Process	Purpose	Notes
1	Conical Tank (2,000 gallons)	Solids removal and equalization	Settling of sand and silt
2	Bag Filters (Mechanical Filtration)	Solids removal	Two Trade Size #2 bag filters in a lead-lag configuration
3	Ionic Resin	Uranium removal	Two 30-ft^3 vessels of Evoqua A-284 anionic resin in a lead-lag configuration
4	Advanced Oxidation (HiPOx)	VOCs and 1,4-dioxane destruction	HiPOx +/-20 gpm system using H_2O_2 and ozone to oxidize 1,4-dioxane and VOCs
5	Granular Activated Carbon	Redundant treatment for 1,4-dioxane and VOCs	Two vessels of GAC, each 500 lb, in a lead-lag configuration
6	Equalization Tank (1,000 gallons)	Equalization/ storage/surge	Equalization of effluent and allows for batch discharge
7	Discharge	To the on-site storm water system that eventually discharges to the Assabet River	Discharge will occur in batch based on high/low switches in the equalization tank

3.2.5 Construction Dewatering and Water Management

The approved 100% RD for Site-wide Sediment and Soils addresses treatment of construction dewatering measures in Specification 02 70 00. Section 1.07.3 of this specification states that at a minimum, the treatment systems must include particle filtration (fractionation tanks, multi-media granular filters, and bag filters), granular activated carbon, uranium treatment (ion exchange resin) and any other necessary treatment for specific treatment for all COCs listed in Table 02 70 00-1 (such as ion exchange or equivalent technology for treatment of other metals), pumps, conveyance piping, and equipment to measure flow rate and volume.

4. Monitoring Locations and Frequency

4.1 Monitoring Locations

Influent samples will be collected immediately prior to any treatment system component. Effluent samples will be collected following all treatment, immediately prior to discharge.

4.2 Startup

During the first week of discharge, influent and effluent will be sampled two times: one sample of the influent and one sample of the effluent will be collected on the first day of the discharge; and one sample of the influent and one sample of the effluent will be collected on one additional non-consecutive day within the first week of discharge.

These “first week” samples will be analyzed with a rushed turnaround time and results will be reviewed no more than one business day from receipt of the results of each sampling event.

For temporary / construction systems, one effluent sample will be collected during the first 10% of discharge. If at any time inspection (i.e., field measurement, visual observation) demonstrates that the discharge does not meet the effluent limitations, corrective action will be taken.

4.3 Routine

After the first week, samples will be analyzed with a standard turnaround time and results will be reviewed no more than 72 hours from receipt of the results. If the treatment system is operating as designed and achieving the effluent limitations, sampling of the effluent will then move to one event per month.

4.4 Post-Upset

If the treatment system is shut down during startup or interrupted as a result of a problem, including when discharge concentrations for any parameter exceeds the limitations, analysis of the cause of the exceedance will be performed and corrective actions will be taken as appropriate. Post-correction monitoring will occur as follows:

- Upon re-initiation of discharge, one effluent sample will be collected with a rushed turnaround time. Those results will be reviewed no more than one business day from receipt of the results of the sampling event. If the problem requiring corrective action has been corrected, then routine monitoring requirements will resume.
- If the problem persists, then that discharge will immediately cease, and EPA will be notified within 24 hours of the need to cease discharge. Discharge may resume upon completion of further corrective actions.

5. Monitoring Parameters and Methods

The DGRP requires testing of all samples using "sufficiently sensitive test procedures (i.e., methods) using the analytical methods found in 40 CFR §136, or alternative test methods approved by EPA…". Appendix I to the DGRP states that "Test methods 8260 and 8270 cannot be used for the purposes of analysis under this general permit unless approved for use in accordance with 40 CFR Part 136.5."

The approved Quality Assurance Project Plan (QAPP) for the NMI Site addresses the use of CLP-like methods for TCL/TAL analysis (8260D/8270E SIM/6020B) rather than the analogous drinking water methods cited in the DRGP (EPA 200.8, 624.1). We propose to conduct all future influent and effluent monitoring using only the TCL/TAL methods approved in the QAPP, which will avoid having two different method results for the same analyte and provide consistency to compare results between influent and monitoring wells (which are also analyzed using the TCL/TAL parameters).

The DGRP 2022 Fact Sheet defines "known present" and "known absent" or "believed absent" with respect to regulated discharge parameters. "Known present", when used in reference to parameters, refers to any parameter that has been quantified in an environmental sample collected at a site. This includes groundwater, surface water and soil/sediment samples. When a given parameter is "known present" at a site, then the limitations for only the known parameters, rather than the limitations for all parameters included in the DRGP will typically apply.

The extensive monitoring history at NMI provides a basis to perform effluent monitoring for VOCs, SVOCs (low-level SIM for 1,4-dioxane), and metals. No analysis for pesticides or herbicides. Soil and sediment dewatering in PCB-impacted areas will add PCB analysis for the influent and effluent.

6. Discharge Limits

The DRGP Section 2.1.1 Table 1 shown below establishes limitations and monitoring requirements applicable to discharge of all treated groundwater.

DRGP Section 2.1.1. - Table 1
Groundwater Limitations and Monitoring Requirements

Parameter	Unit	Wastewater Limitation	Case-by-Case Limitation
Flow Rate (daily average)	GPM		
Temperature			
pH	SU	6.5 to 8.3	6.1.1. pH limits in MA
Total Suspended Solids	mg/L	30	---
Turbidity	NTU	50	See Appendix E
Total Nitrogen	mg/L	10	See Appendix E and G
Total Dissolved Solids	mg/L	500	---
Chloride	mg/L	Report mg/L	See Appendix E and G
Total Petroleum Hydrocarbons	mg/L	5	---
Arsenic	µg/L	104	See Appendix E and G
Copper	µg/L	242	See Appendix E and G
Iron	µg/L	5000	See Appendix E and G

Lead	µg/L	160	See Appendix E and G
Cyanide	µg/L	178,000	See Appendix E

Section 6 of the DGRP provides state-specific limits in the “Appendix E lookup table.” The groundwater COCs at NMI and those cleanup levels are provided in Table L-1 to the Record of Decision and highlighted on the lookup table.

ROD Table L-1 Groundwater Cleanup Level		
Parameter	**Unit**	**Value**
1,4-Dioxane	ug/l	0.46
Uranium	ug/l	30
Depleted Uranium	ug/l	30
Thorium	ug/l	0.33
Iron	ug/l	14,000
Arsenic	ug/l	10
Chromium	ug/l	100
Copper	ug/l	1,300
Cobalt	ug/l	6
Manganese	ug/l	300
Molybdenum	ug/l	100
1,1-Dichloroethene	ug/l	2.7
Tetrachloroethylene	ug/l	5
Trichloroethene	ug/l	5
Vinyl Chloride	ug/l	2
Bis(2-Ethylhexyl) Phthalate	ug/l	6
Nitrate	ug/l	10,000
Nitrite	ug/l	1,000

For the Assabet River, the lowest seven-day average flow expected once every 10 years (7Q10) at the closest USGS gauging station (#01097000, Maynard, MA, ~1.6 miles upstream of the NMI discharge), is 15.1 cubic feet per second (cfs). The median flow is 163 cfs. The Knox Trail flow rate is 20 gallons per minute, or 0.045 cfs. Therefore, the system discharge contributes ~0.3% of the 7Q10 flow, and 0.03% of the median flow in the river. Viewed as dilution ratios, there is a 337 to 1 dilution of the discharge at 7Q10 flow, and a 3,623 to 1 dilution of the discharge at median flow. While there is substantial dilution, the proposed permit equivalency limits do not incorporate dilution values.

Proposed NMI-specific permit equivalency limits have been identified on the lookup table for constituents in the “Appendix E lookup table” with a groundwater ROD cleanup level. For 1,4-dioxane, the discharge limit is the >95% removal established in the Knox Trail design.

In August of 2020, a revised O&M Plan was submitted and later approved by EPA. A discharge limit of < 0.46 µg/L was proposed, as system influent levels were so low (average of 2.98 ug/L from November 2019 to April 2020) that the >95% removal was no longer practically demonstrable. This is outlined in Section 2.0 Performance Standards of the O&M Plan as shown below.

2.0 PERFORMANCE STANDARDS

The September 2015 ROD outlined the Performance Standards (PS) to be met for 1,4-dioxane and VOCs in groundwater. Table L-1, provided as Attachment 2, of the ROD specifies the cleanup level for 1,4-dioxane in site-wide groundwater to be 0.46 µg/L. The 100% RD (2018) proposed the effluent limits for 1,4-dioxane; the limit was established based on the treatment technology's capabilities, based on an annual average removal rate ≥ 95% for 1,4 dioxane. Since operation of EW-1 began, the influent concentrations have been significantly reduced. Influent concentrations used during the design phase were observed at 19.5 µg/L while influent concentrations over the period of November 2019-April 2020 averaged 2.98 µg/L. The initial values allowed for effluent concentrations to be observed at slightly >1 µg/L and maintain a >95% Removal Rate. Since the influent concentrations have decreased, the >95% removal rate has become nearly impossible to prove, as the necessary effluent concentration are below validated non-detectable concentrations. When compared to the Remedial General Permit which stipulates a discharge to surface water limit of 200 µg/L, it is evident that demonstrating >95% removal from an influent concentration of 1.75% of the RGP Limit is not necessary.

Moving forward, the goal of the Final Groundwater Treatment System (FGWTS) is proposed to be to treat to as close to Non-Detect concentrations as possible with any effluent concentration exceeding the site cleanup goal for 1,4-dioxane in groundwater (0.46 µg/L) initiating a review by the operator of site and system conditions. A detection even at 0.46 µg/L would result in a discharge at 0.23% the RGP limit and would not result in any inherit risk to human health and the environment.

The current influent 1,4-dioxane concentration for the Knox Trail system is ~8.2 µg/L, reflecting the blended flow from EW-1, EW-2, and BEW – 5. The current influent 1,4-dioxane concentration from the Bedrock PDI system is ~7.5 µg/L. Therefore, the 1,4-dioxane discharge limit for these systems should be < 0.46 µg/L. If the influent concentration of either system exceeds 10 µg/L 1,4-dioxane, then the limit will revert to > 95% removal.

Case-By-Case (Appendix E) Lookup Table, MASSACHUSETTS Criteria are found in 314 CMR 4.00: https://www.mass.gov/doc/314-cmr-400/download

Please note: this lookup table is not for use for applying wastewater limits under Part 2.1.1 or impaired waters limits under Appendix G

Steps for use:

1. Input highlighted values to adjust water quality criteria for water chemistry and/or dilution

Dilution Factor (must be ≥1)	Critical Low Flow (MGD)	Discharge Flow (MGD)	Hardness mg/L	pH (SU)
338.87	9.76	0.0288	204.80	7.00

applicable to NMI	not applicable to NMI

2. If a POLLUTANT listed below is present at any concentration in your source water (i.e., groundwater, stormwater, potable water, surface water), your treatment system (i.e., chemicals), the discharge (based on existing monitoring data), or soil/sediment, complete steps 3 and 4; enter these values in your NOI tables for Case-by-Case Limits; if a POLLUTANT is not listed, skip to step 5

3. Select the lowest value for your WATERBODY and POLLUTANT for "Daily Max"; multiply this value by your dilution factor (do not multiply by dilution if the POLLUTANT is connected to an impairment, e.g., metals impairment and the POLLUTANT is any metal) - this is your daily max limit

4. Select the lowest "Monthly Avg" value for your WATERBODY and POLLUTANT; multiply this value by your dilution factor (do not multiply by dilution if the POLLUTANT is connected to an impairment) - this is your monthly avg limit only if it is < "Daily Max" or if there is no "Daily Max" limit

5. For any "Monthly Avg" or "Daily Max" value that is below the minimum level of detection for the POLLUTANT, enter the compliance level shown for that POLLUTANT.

6. If the POLLUTANT is present in SOIL-ONLY, select the box for "present in soil-only." If the POLLUTANT is not listed in Part 2.1.1 or Appendix E, select the box for "Required Monitoring" for Daily Max only (do not select "Required Monitoring" for any POLLUTANT with limit(s) because this applies monitoring only, no limits)

WATERBODY	**Freshwater Class A/B**		Coastal and Marine Class SA/SB		Drinking Water Supplies Only	Class A/SA/B/SB	**Class A/SA/B/SB**	**Only if taste/odor impairment is caused by the pollutant**	**Limits**				**Permit Equivalency Limits**
POLLUTANT	**Acute Aquatic Life (Daily Max) µg/L**	**Chronic Aquatic Life (Monthly Avg) µg/L**	**Acute Aquatic Life (Daily Max) µg/L**	**Chronic Aquatic Life (Monthly Avg) µg/L**	**Drinking Water Plus Fish and Shellfish Consumption (Monthly Avg) µg/L**	**Fish and Shellfish Consumption (Monthly Avg) µg/L**	**Maximum Value (TBEL) (Daily Max) µg/L**	**Organoleptic Effect Criteria (Daily Max) µg/L**	Daily Max Criteria (See Step 3)	Daily Max Criteria x DF	Monthly Avg Criteria (See Step 4)	Monthly Avg Criteria x DF	
Acenaphthene	--	--	--	--	70	90		20					
Acetone	--	--	--	--	--	--	7,970	--					
Acrolein	3	3	--	--	3	400	--	--					
Acrylonitrile	--	--	--	--	0.061	7.0	--	--					
Aldrin	1.5	--	0.65	--	0.00000077	0.00000077	--	--					
Alkalinity	--	20,000	--	--	--	--	--	--					
Aluminum (Default Criteria by Watershed)	--	--	--	--	--	--	--	--					
Sudbury, Assabet, and Concord	940	394	--	--	--	--	--	--					
Ammonia	the calculated concentration using	the calculated concentration using	0.233 mg/L (as un-ionized NH_3)	0.035 mg/L (as un-ionized NH_3)	--	--	--	--					
Anthracene	--	--	--	--	300	400	--	--					
Antimony	--	--	--	--	5.6	640	206	--					
Arsenic	340	150	69	36	0.018	0.14	104	--	104	35,242			**104**
Asbestos	--	--	--	--	7 million fibers/L	--	--	--					
Bacteria (Pathogens)	--	--	--	--	*See* 314 CMR 4.05(3), (4), and (5)(f)	--	--	--					
Barium	--	--	--	--	1,000	--	--	--					
Benzene	--	--	--	--	0.58-2.1	16-58	5.0	--					
Benzidine	--	--	--	--	0.00014	0.011	--	--					
Benzo(a)anthracene (PAH)	--	--	--	--	0.0012	0.0013	--	--					
Benzo(a)pyrene (PAH)	--	--	--	--	0.00012	0.00013	--	--					
Benzo(b)fluoranthene (PAH) (also known as 3,4-benzofluoranthene)	--	--	--	--	0.0012	0.0013	--	--					
Benzo(k)fluoranthene (PAH)	--	--	--	--	0.012	0.013	--	--					
Beryllium	--	--	--	--	3.7 ng/L	64 ng/L	--	--					
Bis(2-Chloroethyl) Ether	--	--	--	--	0.03	2.2	--	--					
Bis(Chloromethyl) Ether	--	--	--	--	0.00015	0.017	--	--					
Bis(2-Chloro-1-methylethyl) Ether (also known as Bis(2-Chloroisopropyl) Ether)	--	--	--	--	200	4,000	--	--					
Bis(2-Ethylhexyl) Phthalate	--	--	--	--	0.32	0.37	101	--	101	34,226			**101**
Bromoform[36]	--	--	--	--	7.0	120	--	--					
Butylbenzyl Phthalate	--	--	--	--	0.1	0.10	--	--					
Cadmium	4.421060749	0.460286992	33.19919517	7.947686117	5	--	10.2	--					
Carbon Tetrachloride	--	--	--	--	0.4	5	4.4	--					
Carbaryl	2.1	2.1	1.6	--	--	--	--	--					
Chlordane	1.2	0.0043	0.045	0.004	0.00031	0.00032	--	--					
Chloride	860,000	230,000	--	--	--	--	--	--					
Chlorine	19	11	13	7.5	--	--	200	--					
Chlorobenzene	--	--	--	--	100	800	--	20					
Chlorodibromomethane[36]	--	--	--	--	0.8	21	--	--					
Chloroform[36]	--	--	--	--	60	2,000	--	--					
2-Chloronaphthalene	--	--	--	--	800	1,000	--	--					
2-Chlorophenol	--	--	--	--	30	800	--	0.1					
3-Chlorophenol	--	--	--	--	--	--	--	0.1					
4-Chlorophenol	--	--	--	--	--	--	--	0.1					
Chlorophenoxy Herbicide (also known as 2,4-D)	--	--	--	--	70	12,000	--	--					
Chlorophenoxy Herbicide (also known as 2,4,5-TP or Silvex)	--	--	--	--	50	400	--	--					
Chlorpyrifos	0.083	0.041	0.011	0.0056	--	--	--	--					
Chromium (III)	3243.297242	155.0187006	--	--	--	--	323	--					
Chromium (VI)	16.29327902	11.43451143	1,108	50.35246727	--	--	323	--	323	109,454			**323**
Chromium (total)	--	--	--	--	100	--	--	--					
Chrysene (PAH)	--	--	--	--	0.12	0.13	--	--					
cis-1,2-Dichloroethylene	--	--	--	--	--	--	70	--					
Copper	27.50644482	17.21322462	5.78313253	3.734939759	1,300	--	242	1,000	242	82,006			**242**
Cyanide	22	5.2	1	1	4	400	178,000	--					
4,4'-DDT	0.4	0.001	0.07	0.001	--	--	--	--					
Demeton	--	0.1	--	0.1	--	--	--	--					
Diazinon	0.17	0.17	0.82	0.82	--	--	--	--					
Dibenzo(a,h)anthracene	--	--	--	--	0.00012	0.00013	--	--					
1,2-Dichlorobenzene (also known as o-DCB)	--	--	--	--	600	3,000	600	--					
1,3-Dichlorobenzene	--	--	--	--	7	10	320	--					
1,4-Dichlorobenzene (also known as p-DCB)	--	--	--	--	5	900	5.0	--					
3,3'-Dichlorobenzidine	--	--	--	--	0.049	0.15	--	--					
Dichlorobromomethane[36] (also known as Bromodichloromethane)	--	--	--	--	0.95	27	--	--					
p,p′-Dichlorodiphenyldichloroethane (also known as DDD)	--	--	--	--	0.00012	0.00012	--	--					
p,p′-Dichlorodiphenyldichloroethylene (also known as DDE)	--	--	--	--	0.000018	0.000018	--	--					

WATERBODY	Freshwater Class A/B		Coastal and Marine Class SA/SB		Drinking Water Supplies Only	Class A/SA/B/SB	Class A/SA/B/SB	Only if taste/odor impairment is caused by the pollutant	Limits				Permit Equivalency Limits
POLLUTANT	Acute Aquatic Life (Daily Max) µg/L	Chronic Aquatic Life (Monthly Avg) µg/L	Acute Aquatic Life (Daily Max) µg/L	Chronic Aquatic Life (Monthly Avg) µg/L	Drinking Water Plus Fish and Shellfish Consumption (Monthly Avg) µg/L	Fish and Shellfish Consumption (Monthly Avg) µg/L	Maximum Value (TBEL) (Daily Max) µg/L	Organoleptic Effect Criteria (Daily Max) µg/L	Daily Max Criteria (See Step 3)	Daily Max Criteria x DF	Monthly Avg Criteria (See Step 4)	Monthly Avg Criteria x DF	
p,p′-Dichlorodiphenyltrichloroethane (also known as DDT)	--	--	--	--	0.000030	0.000030	--	--					
1,1-Dichloroethane	--	--	--	--	--	--	70	--	70	23,721			**70**
1,2-Dichloroethane	--	--	--	--	5	650	5.0	--					
1,1-Dichloroethylene	--	--	--	--	7	20,000	3.2	--	3.2	1,084			**3.2**
2,3-Dichlorophenol	--	--	--	--	--	--	--	0.04					
2,4-Dichlorophenol	--	--	--	--	10	60	--	0.3					
2,5-Dichlorophenol	--	--	--	--	--	--	--	0.5					
2,6-Dichlorophenol	--	--	--	--	--	--	--	0.2					
1,2-Dichloropropane	--	--	--	--	0.90	31	--	--					
1,3-Dichloropropene	--	--	--	--	0.27	12	--	--					
Dieldrin	0.12	0.05614	0.36	--	0.0000012	0.0000012	--	--					
Diethyl Phthalate	--	--	--	--	600	600	--	--					
2,4-Dimethylphenol	--	--	--	--	100	3,000	--	400					
Dimethyl Phthalate	--	--	--	--	2,000	2,000	--	--					
Di-n-Butyl Phthalate	--	--	--	--	20	30	--	--					
Dinitrophenols	--	--	--	--	10	1,000	--	--					
2,4-Dinitrophenol	--	--	--	--	10	300	--	--					
2,4-Dinitrotoluene	--	--	--	--	0.049	1.7	--	--					
Dioxin (also known as 2,3,7,8-Tetrachloro-dibenzo-p-dioxin or TCDD)	--	--	--	--	5.0E-9	5.1E-9	--	--					
1,4-Dioxane	--	--	--	--	--	--	200	--		>95% removal			**>95% removal**
1,2-Diphenylhydrazine	--	--	--	--	0.03	0.2	--	--					
alpha-Endosulfan beta-Endosulfan	0.11	0.056	0.017	--	--	--	--	--					
alpha-Endosulfan	--	--	--	--	20	30	--	--					
beta-Endosulfan	--	--	--	--	20	40	--	--					
Endosulfan Sulfate	--	--	--	--	20	40	--	--					
Endrin	0.086	0.036	0.018	--	0.03	0.03	--	--					
Endrin Aldehyde	--	--	--	--	1	1	--	--					
Ethylbenzene	--	--	--	--	68	130	--	--					
Ethylene Dibromide	--	--	--	--	--	--	0.05	--					
Fluoranthene	--	--	--	--	20	20	--	--					
Fluorene (PAH)	--	--	--	--	50	70	--	--					
Guthion	--	0.01	--	0.01	--	--	--	--					
Heptachlor	0.3	0.0038	0.03	0.0036	0.0000059	0.0000059	--	--					
Heptachlor Epoxide	0.3	0.0038	0.03	0.0036	0.000032	0.000032	--	--					
Hexachlorobenzene	--	--	--	--	0.000079	0.000079	--	--					
Hexachlorobutadiene	--	--	--	--	0.01	0.01	--	--					
alpha-Hexachlorocyclohexane (also known as alpha-HCH)	--	--	--	--	0.00036	0.00039	--	--					
beta-Hexachlorocyclohexane (also known as beta-HCH)	--	--	--	--	0.008	0.014	--	--					
gamma-Hexachlorocyclohexane (also known as gamma-HCH, gamma-BHC, or Lindane)	0.95	--	0.08	--	--	--	--	--					
gamma-Hexachlorocyclohexane (also known as gamma-HCH or Lindane)	--	--	--	--	0.2	4.4	--	--					
Hexachlorocyclohexane -Technical (also known as technical HCH)	--	--	--	--	0.0066	0.010	--	--					
Hexachlorocyclopentadiene	--	--	--	--	4	4	--	1					
Hexachloroethane	--	--	--	--	0.1	0.1	--	--					
Indeno(1,2,3-cd) pyrene (PAH)	--	--	--	--	0.0012	0.0013	--	--					
Iron	--	1,000	--	--	--	--	5,000	300	1000	338,868			**1000**
Isophorone	--	--	--	--	34	1,800	--						
Lead	203.3541715	7.924420119	220.8201893	8.517350158	--	--	160						
Malathion	--	0.1	--	0.1	--	--	--						
Manganese	--	--	--	--	50	100	--						
Mercury	1.647058824	0.905882353	2.117647059	1.105882353	2	--	0.739						
Methylmercury	--	--	--	--	--	0.3 mg/kg	--						
Methoxychlor	--	0.03	--	0.03	0.02	0.02	--						
2-Methyl-4-Chlorophenol	--	--	--	--	--	--	--	1,800					
3-Methyl-4-Chlorophenol (also known as p-chloro-m-cresol)	--	--	--	--	500	2,000	--	3,000					
3-Methyl-6-Chlorophenol	--	--	--	--	--	--	--	20					
2-Methyl-4,6-Dinitrophenol	--	--	--	--	2	30	--						
Methyl Bromide	--	--	--	--	100	10,000	--						
Methyl-tert-butyl-Ether							70	20					
Methylene Chloride (also known as Dichloromethane)	--	--	--	--	5	1,000	4.6	--					
Mirex	--	0.001	--	0.001			--	--					
Molybdenum													
Naphthalene	--	--	--	--	--	--	20	--					
Nickel	860.4372357	95.66386813	74.74747475	8.282828283	100	4,600	1,450	--					
Nitrate (as N) (criterion also applies to total nitrate/nitrite)	--	--	--	--	10,000	--	--	--					**10000**
Nitrite	--	--	--	--	1,000	--	--	--					
Nitrobenzene	--	--	--	--	10	600	--	30					
Nitrogen/Phosphorus	*See* 314 CMR 4.05(5)(e)				--	--	--	--					
Nitrosamines	--	--	--	--	0.0008	1.24	--	--					
Nitrosodibutylamine	--	--	--	--	0.0063	0.22	--	--					
Nitrosodiethylamine	--	--	--	--	0.0008	1.24	--	--					
Nitrosopyrrolidine	--	--	--	--	0.016	34	--	--					
N-Nitrosodimethylamine (also known as NDMA)	--	--	--	--	0.00069	3.0	--	--					
N-Nitrosodi-n-Propylamine	--	--	--	--	0.0050	0.51	--	--					
N-Nitrosodiphenylamine	--	--	--	--	3.3	6.0	--	--					
Nonylphenol	28	6.6	7	1.7	--	--	--	--					
Parathion	0.065	0.013	--	--	--	--	--	--					
Pentachlorobenzene	--	--	--	--	0.1	0.1	--	--					
Pentachlorophenol	8.723320878	6.692583681	13	7.9	0.03	0.04	1.0	30					
pH	6.5-8.3		6.5-8.5		--	--	6.0-9.0	--					
Phenol	--	--	--	--	4,000	300,000	1,080	300					
Phosphorus, Elemental	--	--	--	0.1	--	--	--	--					
Polychlorinated Biphenyls (PCBs)	--	0.014	--	0.03	0.000064	0.000064	0.5	--					**0.5**

WATERBODY	Freshwater Class A/B		Coastal and Marine Class SA/SB		Drinking Water Supplies Only	Class A/SA/B/SB	Class A/SA/B/SB	Only if taste/odor impairment is caused by the pollutant	Limits				Permit Equivalency Limits
POLLUTANT	**Acute Aquatic Life (Daily Max) µg/L**	**Chronic Aquatic Life (Monthly Avg) µg/L**	**Acute Aquatic Life (Daily Max) µg/L**	**Chronic Aquatic Life (Monthly Avg) µg/L**	**Drinking Water Plus Fish and Shellfish Consumption (Monthly Avg) µg/L**	**Fish and Shellfish Consumption (Monthly Avg) µg/L**	**Maximum Value (TBEL) (Daily Max) µg/L**	**Organoleptic Effect Criteria (Daily Max) µg/L**	Daily Max Criteria (See Step 3)	Daily Max Criteria x DF	Monthly Avg Criteria (See Step 4)	Monthly Avg Criteria x DF	
Pyrene (PAH)	--	--	--	--	20	30	--	--					
Selenium	1/[(f1/185.9) + (f2/12.82)], where f1 and f2 are the fractions of total selenium as selenite and selenate, respectively	5	290.5811623	71.14228457	50	4,200	235.8	--					
Silver	12.98634338	--	1.117647059	--	--	--	35.1	--					
Solids (Dissolved) and Salinity					250,000	--	--	--					
Sulfide- Hydrogen Sulfide	--	2.0	--	2.0	--	--	--	--					
Temperature	*See* Part 6 of the DRGP						--	--					
tert-Butyl Alcohol	--	--	--	--	--	--	120	--					
tert-Amyl Methyl Ether	--	--	--	--	--	--	90	--					
1,2,4,5-Tetrachlorobenzene	--	--	--	--	0.03	0.03	--	--					
Tetrachloroethylene	--	--	--	--	10	29	5.0	--	5	1,694			**5**
1,1,2,2-Tetrachloroethane	--	--	--	--	0.2	3	--	--					
2,3,4,6-Tetrachlorophenol	--	--	--	--	--	--	--	1					
Thallium	--	--	--	--	0.24	0.47	--	--					
Thorium													
Toluene	--	--	--	--	57	520	--	--					
Total BTEX (sum of benzene, toluene, ethylbenzene and xylenes)	--	--	--	--	--	--	100	--					
Total Group I PAHs	--	--	--	--	--	--	0.35	--					
Total Group II PAHs	--	--	--	--	--	--	100	--					
Total Petroleum Hydrocarbons	--	--	--	--	--	--	5,000	--					
Total Phthalates	--	--	--	--	--	--	190	--					
Total Trihalomethanes (TTHM) (the sum of bromodichloromethane, dibromochloro- methane, bromoform (tribromomethane) and chloroform (trichloromethane))	--	--	--	--	80	--	--	--					
Toxaphene	0.73	0.0002	0.21	0.0002	0.00070	0.00071	--	--					
Tributyltin (TBT)	0.46	0.072	0.42	0.0074			--	--					
Trans-1,2-Dichloroethylene	--	--	--	--	100	4,000	--	--					
1,2,4-Trichlorobenzene	--	--	--	--	0.071	0.076	--	--					
Trichloroethylene	--	--	--	--	0.6	7	5.0	--	5	1,694			**5**
1,1,1-Trichloroethane	--	--	--	--	200	200,000	200	--					
1,1,2-Trichloroethane	--	--	--	--	0.55	8.9	5.0	--					
2,3,4,6-Trichlorophenol	--	--	--	--	--	--	--	1					
2,4,5-Trichlorophenol	--	--	--	--	300	600	--	1					
2,4,6-Trichlorophenol	--	--	--	--	1.5	2.8	--	2					
Uranium									30	10,166			**30**
Vinyl Chloride	--	--	--	--	0.022	1.6	2.0	--	2	678			**2**
Zinc	219.9409976	219.9409976	95.13742072	85.62367865	7,400	26,000	420	5,000					

NMI COC on lookup table
NMI COC added to table
N/A for NMI

No discharge limit established for either molybdenum or thorium. No criteria found, and no defined plume of either constituent.