



**RHODE ISLAND**  
**DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**  
OFFICE OF WATER RESOURCES  
235 Promenade Street, Providence, Rhode Island 02908

December 21, 2021

**CERTIFIED MAIL**

Mr. Robert A. Pezza, President  
Material Sand & Stone Corp.  
618 Greenville Rd.  
North Smithfield, RI 02896

**RE: Final Permit for Material Sand & Stone Corp.**  
**RIPDES Permit No. RI0024007**

Dear Mr. Pezza:

Enclosed is your final Rhode Island Pollutant Discharge Elimination System (RIPDES) Permit issued pursuant to the referenced application. State regulations, promulgated under Chapter 46-12 of the Rhode Island General Laws of 1956, as amended, require this permit to become effective on the date specified in the attached permit.

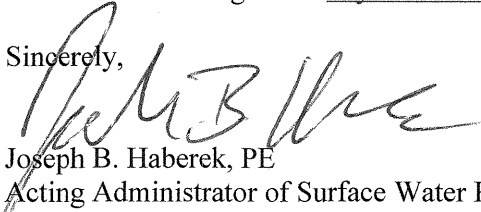
Please note that your facility is required to submit a Discharge Monitoring Report for each outfall every quarter, per Part I.D.2 of your permit. Your first DMR, which is for the first calendar quarter of 2022, will be due by April 15, 2022. DMR instructions are attached. DMRs must be submitted electronically via NetDMR. It will be necessary for your facility to sign up for NetDMR privileges in order to use the NetDMR system. Guidance on how to sign up for NetDMR via EPA's Central Data Exchange (CDX) can be found on DEM's website, on the following webpage, under "Guidance":

<http://www.dem.ri.gov/programs/water/permits/ripdes/reporting.php>

Also enclosed is information relative to hearing requests and stays of RIPDES Permits.

We appreciate your cooperation throughout the development of this permit. Should you have any questions concerning this permit, feel free to contact Samuel Kaplan of the State Permits Staff at (401) 222-4700, extension 2777046 or [samuel.kaplan@dem.ri.gov](mailto:samuel.kaplan@dem.ri.gov). If you have questions related to signing up for a CDX account or on the submittal of DMRs via NetDMR, feel free to contact Crystal Charbonneau of the RIPDES Program at [Crystal.Charbonneau@dem.ri.gov](mailto:Crystal.Charbonneau@dem.ri.gov).

Sincerely,

  
Joseph B. Haberek, PE  
Acting Administrator of Surface Water Protection

JBH: sk

Enclosures

ecc: Robert Ferrari, P.E., Ferrari Engineering  
Jeanne Rotatori, Ferrari Engineering  
Nancy Freeman, DEM-Freshwater Wetland Program  
Martin Wencek, DEM-Freshwater Wetland Program

Traci Pena, RIDEM-OWR  
Pat Hogan, P.E., DEM-OC&I  
Crystal Charbonneau, RIDEM-OWR  
David Chopy, P.E., DEM-OC&I

## RESPONSE TO COMMENTS

NO SIGNIFICANT COMMENTS WERE RECEIVED ON THE DRAFT PERMIT FOR THIS FACILITY; THEREFORE, NO RESPONSE WAS PREPARED.

## HEARING REQUESTS

If you wish to contest any of the provisions of this permit, you may request a formal hearing within thirty (30) days of receipt of this letter. The request should be submitted to the Administrative Adjudication Division at the following address:

Mary Dalton, Clerk  
Department of Environmental Management  
Office of Administrative Adjudication  
235 Promenade Street  
3rd Floor, Rm 350  
Providence, RI 02908

Any request for a formal hearing must conform to the requirements of §1.50 of the Regulations for the Rhode Island Pollutant Discharge Elimination System (RI Code of Regulations; 250-RICR-150-10-1.50).

## STAYS OF RIPDES PERMITS

Should the Department receive and grant a request for a formal hearing, the contested conditions of the permit will not automatically be stayed. However, the permittee, in accordance with §1.51 of the Regulations for the Rhode Island Pollutant Discharge Elimination System (RI Code of Regulations; 250-RICR-150-10-1.51), may request a temporary stay for the duration of adjudicatory hearing proceedings. Requests for stays of permit conditions should be submitted to the Office of Water Resources at the following address:

Joseph B. Haberek, P.E.  
Acting Administrator of Surface Water Protection  
Office of Water Resources  
235 Promenade Street  
Providence, Rhode Island 02908

All uncontested conditions of the permit will be effective and enforceable in accordance with the provisions of §1.50 of the Regulations for the Rhode Island Pollutant Discharge Elimination System (RI Code of Regulations; 250-RICR-150-10-1.50).

AUTHORIZATION TO DISCHARGE UNDER THE  
RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Chapter 46-12 of the Rhode Island General Laws, as amended,  
Material Sand and Stone Corporation  
618 Greenville Road  
North Smithfield, RI 02896

is authorized to discharge from a facility located at

618 Greenville Road  
North Smithfield, RI 02896

to receiving waters named

Woonasquatucket River and  
Unnamed Wetland Tributary to the Woonasquatucket River

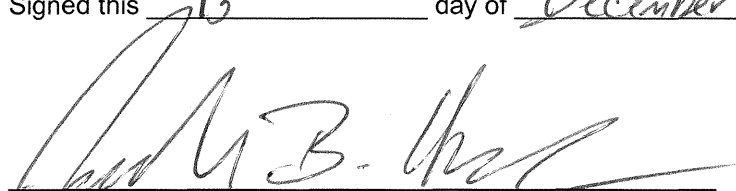
in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on January 1, 2022.

This permit and the authorization to discharge expire at midnight, five (5) years from the effective date.

This permit consists of 18 pages in Part I including effluent limitations, monitoring requirements, etc. and 10 pages in Part II including General Conditions.

Signed this 13<sup>th</sup> day of December, 2021.

  
Joseph B. Haberek, P.E., Acting Administrator for Surface Water  
Office of Water Resources  
Rhode Island Department of Environmental Management  
Providence, Rhode Island

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

1. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number(s) 001A (Parshall flume outfall from sedimentation pond system to wetland which ultimately flows into the Woonasquatucket River).

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs./day		Concentration - specify units			Measurement Frequency	Sample Type
	Average Monthly	Maximum Daily	Average Monthly *(Minimum)	Average Weekly *(Average)	Maximum Daily *(Maximum)		
Flow	--- MGD	--- MGD				1/Quarter	Calculated <sup>1</sup>
TSS			25 mg/l		45 mg/l	1/Quarter	24-Hr Comp.
pH			(6.0 S.U.)		(9.0 S.U.)	1/Quarter	24-Hr Comp.
Total Zinc			29.7 ug/L		29.7 ug/L	1/Quarter	24-Hr Comp.
Total Iron			0.800 mg/L		--- mg/L	1/Quarter	24-Hr Comp.
Enterococci			--- CFU/100 ml		--- CFU/100 ml	1/Quarter	24-Hr Comp.
Nitrate + Nitrite, as N			--- mg/l <sup>2</sup>		--- mg/l <sup>2</sup>	1/Quarter	24-Hr Comp.
Perchlorate			--- mg/l		--- mg/l	1/Quarter	24-Hr Comp.

--- Signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

\*Values in parentheses ( ) are to be reported as Minimum/Average/Maximum for the reporting period rather than Average Monthly/Average Weekly/Maximum Daily.

<sup>1</sup>Flow shall be calculated using appropriate Parshall flow equation and appropriate Parshall flow parameters.

<sup>2</sup>See Part I.A.5 of the permit

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Outfall 001A.

**A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

2. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number(s) 002A (Low point in the northern berm of the site which would flow into the Woonasquatucket River).

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>					<u>Monitoring Requirement</u>	
	<u>Quantity - lbs./day</u>		<u>Concentration - specify units</u>			<u>Measurement Frequency</u>	<u>Sample Type</u>
	<u>Average Monthly</u>	<u>Maximum Daily</u>	<u>Average Monthly</u> *(Minimum)	<u>Average Weekly</u> *(Average)	<u>Maximum Daily</u> *(Maximum)		
Flow	--- MGD	--- MGD				1/Quarter	Calculated <sup>1,2</sup>
TSS			--- mg/l <sup>4</sup>		--- mg/l <sup>4</sup>	1/Quarter	Grab <sup>2,3</sup>
pH			(6.0 S.U.)		(9.0 S.U.)	1/Quarter	Grab <sup>2,3</sup>
Total Zinc			--- ug/L		--- ug/L	1/Quarter	Grab <sup>2</sup>
Enterococci			--- CFU/100 ml		--- CFU/100 ml	1/Quarter	Grab <sup>2,3</sup>
Nitrate + Nitrite, as N			--- mg/l <sup>4</sup>		--- mg/l <sup>4</sup>	1/Quarter	Grab <sup>2,3</sup>
Perchlorate			--- mg/l		--- mg/l	1/Quarter	Grab <sup>2,3</sup>

--- Signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

\*Values in parentheses ( ) are to be reported as Minimum/Average/Maximum for the reporting period rather than Average Monthly/Average Weekly/Maximum Daily.

<sup>1</sup>Flow shall be calculated using the drainage area, runoff coefficient, and the amount of rainfall.

<sup>2</sup>Samples must be obtained from a discharge of which is the result of a representative storm event that occurs at least seventy-two (72) hours after the previously measurable storm event. A representative storm event should be within 50% of the average Rhode Island storm event, 0.7 inches in depth and 12 hours in duration, and shall be a minimum of 0.1 inches per twenty-four (24) hours in magnitude.

<sup>3</sup>The "Grab" value shall be obtained using a grab sample, consisting of an individual sample of at least 100 mL, collected during the first thirty (30) minutes of a discharge. If it is not practicable to collect the sample during the first 30 minutes, the sample must be collected during the first hour of discharge and a description of why a grab sample during the first 30 minutes was impracticable must be included in the Discharge Monitoring Report.

<sup>4</sup>See Part I.A.5 of the permit

3.
  - a. The discharge shall not cause visible discoloration of the receiving waters.
  - b. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
4. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:
  - a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
    - (1) One hundred micrograms per liter (100 ug/l);
    - (2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitro-phenol; and one milligram per liter (1 mg/l) for antimony;
    - (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. s122.21(g)(7); or
    - (4) Any other notification level established by the Director in accordance with 40 C.F.R. s122.44(f) and Rhode Island Regulations.
  - b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
    - (1) Five hundred micrograms per liter (500 ug/l);
    - (2) One milligram per liter (1 mg/l) for antimony;
    - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. s122.21(g)(7); or
    - (4) Any other notification level established by the Director in accordance with 40 C.F.R. s122.44(f) and Rhode Island Regulations.
  - c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or by-product any toxic pollutant which was not reported in the permit application.
5. The permittee shall compare sampling results for Nitrate + Nitrite and for Total Suspended Solids to the following benchmark monitoring concentrations. The benchmark concentrations are intended to be generic pollutant levels that, under nearly all scenarios, are protective of water quality standards and are only to be used to evaluate the overall effectiveness of the SWPPP (Storm Water Pollution Prevention Plan – see part I.B).

Benchmark Monitoring concentrations may be subject to change by permit modification to be consistent with future revisions to EPA and/ or State benchmarks:

Parameter	Benchmark Concentration (mg/l)
Nitrate + Nitrite Nitrogen	0.68
Total Suspended Solids	100

Any quarterly exceedances of the benchmark concentrations shall trigger a reevaluation of the implementation of the existing Storm Water Pollution Prevention Plan (SWPPP) and facility operations to determine if there are possible problems with non-structural BMPs or maintenance that can be corrected. The SWPPP shall be promptly revised in response to these reevaluations and in no case later than thirty (30) calendar days following the receipt of monitoring results that exceed the benchmark concentrations. A report of the permittee's comparison of monitoring results with the benchmark concentrations shall be submitted with each DMR. If the permittee exceeds the benchmark concentrations during the monitoring period the report shall include a detailed description of the possible causes of the exceedances or of any significant increases in parameter concentrations, the dates and scopes of inspections, a summary of monitoring results and visual inspections, and any modifications made to the SWPPP to reduce the pollutant levels.

On a yearly basis, the permittee shall calculate the annual average of all sampling data for each pollutant for the previous calendar year (January 1 – December 31). If the annual average exceeds the applicable benchmark concentration, then the permittee shall perform a detailed review of all storm water controls, BMPs, SOP's, and maintenance schedules contained in the SWPPP and shall make reasonable amendments to reduce the pollutant levels in the discharge. These amendments shall be submitted to the Department of Environmental Management - Office of Water Resources with the annual Comprehensive Site Evaluation Report required under Part I.B.5.c.(10). If the amendments will include changes to structural controls, the report must include a schedule for the implementation of the proposed structural modifications. Proposed changes to structural storm water controls must be approved by the DEM prior to implementation. Upon DEM approval of the structural changes, the permittee shall implement them in accordance with the approved schedule.

6. This permit serves as the State's Water Quality Certificate for the discharges described herein.
7. There shall be no direct or indirect discharge of asphalt plant wastewater (e.g. effluent from the asphalt baghouse) to surface water.
8. This permit does not authorize the discharge of concrete truck bottle wash water to surface waters.
9. The washing of truck engine compartments and undercarriages is prohibited.
10. The direct or indirect discharge of detergents to surface waters is prohibited.

**B. STORM WATER POLLUTION PREVENTION PLAN REQUIREMENTS**

1. Within thirty (30) days of the effective date of this permit, Material Sand and Stone shall submit a revised Storm Water Pollution Prevention Plan (referred to herein as the "SWPPP" or the "Plan") that addresses all of the requirements of this permit, including but not limited to the requirements from Part I.B.5.d-f. This SWPPP shall be subject to DEM review and approval, in accordance with Part I.B.3.

The SWPPP shall be prepared in accordance with good engineering practices and identify potential sources of pollutants, which may reasonably be expected to affect the quality of storm water discharges associated with industrial activity from the facility. In addition, the Plan shall describe and ensure the implementation of Best Management Practices (BMPs) which are to be used to reduce or eliminate the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit.

2. The Plan shall be signed by the permittee in accordance with RIPDES Regulations (250-RICR-150-10.1.12) and retained on-site. The Plan shall be made available upon request to the Director.
3. If the Plan is reviewed by the Director, he or she may notify the permittee at any time that the Plan does not meet one or more of the minimum requirements of this part. After such notification from the Director, the permittee shall make changes to the Plan and shall submit to the Director a written certification that the requested changes have been made. Unless otherwise provided by the Director, the permittee shall have thirty (30) days after such notification to make the necessary changes.
4. The permittee shall immediately amend the Plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the waters of the State; a release of reportable quantities of hazardous substances and oil; or if the SWPPP proves to be ineffective in achieving the general objectives of controlling pollutants in storm water discharges (based upon exceedances of effluent limitations in Part I.A., exceedances of benchmark concentrations in Part I.A.5., or the results of inspections required in Part I.B.5.c. of this permit. Changes must be noted and then submitted to DEM. Amendments to the Plan may be reviewed by DEM in the same manner as Part I.B.3 of this permit.
5. The SWPPP shall include, at a minimum, the following items:
  - a. Description of Potential Pollutant Sources. The Plan must provide a description of potential sources which may be reasonably expected to add significant amounts of pollutants to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. It must identify all activities and significant materials, which may potentially be significant pollutant sources. The plan shall include:

- (1) A site map indicating: a delineation of the drainage area of outfalls 001 and 002, each existing structural control measure to reduce pollutants in storm water runoff, locations where significant materials are exposed to storm water, locations where significant leaks or spills have occurred, a delineation of all impervious surfaces, all surface water bodies, all separate storm sewers, and the locations of the following activities where such areas are exposed to storm water: fueling stations, vehicle and equipment maintenance and/or cleaning areas, material handling areas, material storage areas, process areas, and waste disposal areas;



- (2) A topographic map extending one-quarter of a mile beyond the property boundaries of the facility;
  - (3) An estimate of the overall runoff coefficient for the site, determined by an acceptable method, such as, but not limited to, area weighting;
  - (4) A narrative description of significant materials that have been treated, stored, or disposed of in a manner to allow exposure to storm water between the time of three (3) years prior to the issuance of this permit to the present; method of on-site storage or disposal; materials management practices employed to minimize contact of these materials with storm water runoff between the time of three (3) years prior to the issuance of this permit and the present; materials loading and access areas; the location and description of existing structural and non-structural control measures to reduce pollutants in storm water runoff; and description of any treatment the storm water receives;
  - (5) A list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at the facility three (3) years prior to the effective date of this permit to the present;
  - (6) A list of any pollutants limited in effluent guidelines to which a facility is subject under 40 CFR Subchapter N, any pollutants listed on a RIPDES permit to discharge process water, and any information required under 250-RICR-150-10-1 §11.1 of the Regulations for the Rhode Island Pollutant Discharge Elimination System (250-RICR-150-10-1.11) or 40 CFR 122.21(g)(iii)-(v);
  - (7) For each area of the facility that generates storm water discharges associated with industrial activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow and an estimate of the types of pollutants, which are likely to be present in storm water associated with industrial activity;
  - (8) A summary of existing sampling data describing pollutants in storm water discharges from the facility;
- b. Storm Water Management Controls. The permittee must develop a description of storm water management controls appropriate for the facility and implement such controls. The appropriateness for implementing controls listed in the Plan must reflect identified potential sources of pollutants at the facility. The description of storm water management controls must address the following minimum components, including a schedule for implementing such controls:
- (1) *Pollution Prevention Team.* The Plan must identify a specific individual(s) by name or title within the facility organization as members of a team that are responsible for developing the Plan and assisting the plant manager in its implementation, maintenance, and revision. The Plan must clearly identify the responsibilities of each team member. The activities and responsibilities of the team must address all aspects of facility's Plan.
  - (2) *Risk Identification and Assessment/Material Inventory.* The Plan must assess the potential of various sources which contribute pollutants to storm discharge associated with the industrial activity. The Plan must include an inventory of the types of materials handled. Each of the following must be evaluated for the reasonable potential for contributing pollutants to runoff:

loading and unloading operations, outdoor manufacturing or processing activities, significant dust or particulate generating processes, and on-site waste disposal practices. Factors to consider include the toxicity of chemicals; quantity of chemicals used, produced, or discharged; the likelihood of contact with storm water, and the history of significant leaks or spills of toxic or hazardous pollutants.

- (3) *Preventative Maintenance.* A preventative maintenance program must involve inspection and maintenance of storm water management devices (i.e., oil/water separators, catch basins) as well as inspecting and testing plant equipment and systems to uncover conditions that could cause breakdown or failures resulting in discharges of pollutants to surface waters.
- (4) *Good Housekeeping.* Good housekeeping requires the maintenance of a clean, orderly facility. The permittee must keep all exposed areas of the facility in a clean, orderly manner where such exposed areas could contribute pollutants to storm water discharges. Common problem areas include: around trash containers, storage areas and loading docks. Measures must also include: a schedule for regular pickup and disposal of garbage and waste materials; routine inspections for leaks and conditions of drums, tanks and containers.
- (5) *Spill Prevention and Response Procedure:* The permittee must minimize the potential for leaks, spills and other releases that may be exposed to stormwater and develop plans for effective response to such spills if or when they occur. At a minimum the permittee must implement a) procedures for plainly labeling containers (e.g., "Used Oil", "Spent Solvents", "Fertilizers and Pesticides", etc.) that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur; b) preventative measures such as barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling; c) procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. Employees who may cause, detect, or respond to a spill or leak must be trained in these procedures and have necessary spill response equipment available. If possible, one of these individuals should be a member of the stormwater Pollution Prevention Team (see Part I.B.5.b.1); and d) procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies. Where a leak, spill, or other release containing a hazardous substance or oil requires the activation of the facility's response plan, the permittee must immediately notify the DEM and take appropriate action to stop or minimize a release of Hazardous Material posing an Imminent Hazard and/or any on-going spill of Hazardous Material at the time of discovery. Local requirements may necessitate reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies. Contact information must be in locations that are readily accessible and available. Measures for cleaning up hazardous material spills or leaks must be consistent with applicable RCRA regulations at 40 CFR Part 264 and 40 CFR Part 265.

- (6) *Storm Water Management.* The permittee must describe the traditional stormwater management practices (permanent structural BMPs other currently exist or that are planned for the facility). These types of BMPs typically are used to divert, infiltrate, reuse, or otherwise reduce pollutants in storm water discharges from the site. All BMPs that the permittee determines are reasonable and appropriate, or are required by a State or local authority; must be implemented and maintained. Factors to consider when the permittee is selecting appropriate BMPs should include: 1) the industrial materials and activities that are exposed to storm water, and the associated pollutant potential of those materials and activities; and 2) the beneficial and potential detrimental effects on surface water quality, ground water quality, receiving water base flow (dry weather stream flow), and physical integrity of receiving waters.

Structural measures should be placed on upland soils, avoiding wetlands and floodplains, if possible. Structural BMPs may require a separate permit under section 404 of the CWA before installation begins on an assessment of the potential of various sources at the plant to contribute pollutants to storm water discharges associated with industrial activity (see Part I.B.5.b.2 of this permit), the Plan must provide that measures, determined to be reasonable and appropriate, must be implemented and maintained.

- (7) *Sediment and Erosion Prevention.* The Plan must identify areas which; due to topography, activities, or other factors; have a high potential for significant soil erosion and identify measures to limit erosion.
- (8) *Employee Training.* The permittee must describe the storm water employee training program for the facility. The description should include the topics covered, such as spill response, good housekeeping and material management practices, and must identify periodic dates (e.g., every 6 months during the months of July and January) for such training. The permittee must provide employee training for all employees that work in areas where industrial materials or activities are exposed to storm water, and for employees that are responsible for implementing activities identified in the SWPPP (e.g., inspectors, maintenance people). The employee training should inform them of the components and goals of the SWPPP.
- (9) *Visual Inspections.* Qualified plant personnel must be identified to inspect designated equipment and plant areas. Material handling areas must be inspected for evidence of, or the potential for, pollutants entering the drainage system. A tracking or follow up procedure must be used to ensure that the appropriate action has been taken in response to the inspection. Records of inspections must be maintained on site for at least five (5) years.
- (10) *Recordkeeping and Internal Reporting Procedures.* Incidents such as spills, or other discharges, along with other information describing the quality and quantity of storm water discharges must be included in the records. All inspections and maintenance activities must be documented and maintained on site for at least five (5) years.

- (11) *Minimizing Exposure:* Where practicable, industrial materials and activities should be protected by a storm-resistant shelter to prevent exposure to rain, snow, snowmelt, or runoff.
- (12) *Other Controls:* Off-site Vehicle Tracking of Sediments. Each site shall have graveled access entrance and exit drives and parking areas to reduce the tracking of sediment onto public or private roads.

c. Site Inspection.

- (1) Visual inspections of sediment basins must be conducted within 24 hours after all rainstorms which produce more than 0.5" of rainfall, or a minimum of weekly. During periods of continuous rain and/or melting, erosion control measures shall be inspected daily.
- (2) The following inspection must be conducted on at least a semi-annual basis: sediment accumulation in all silt ponds must be measured every six (6) months. Sediment accumulation must be removed when the sediment depth in the basin reaches 2/3 of the available storage area.
- (3) An annual site inspection must be conducted by appropriate personnel named in the SWPPP to verify that the description of potential pollutant sources required under Part I.B.5.b.2 is accurate, that the drainage map has been updated or otherwise modified to reflect current conditions, and controls to reduce pollutants in storm water discharges associated with industrial activity identified in the Plan are being implemented and are adequate. A tracking or follow up procedure must be used to ensure that the appropriate action has been taken in response to the inspection. Records documenting significant observations made during the site inspection must be retained as part of the SWPPP for a minimum of five (5) years.
- (4) Inspect any straw/hay bale barriers weekly to ensure that the integrity of the barriers have not been breached and to check sediment accumulation. Sediment must be removed from behind the barriers when its accumulation reaches 1/2 the height of the barriers.
- (5) Inspect any riprap on the site after each major storm event, for the first year after the placement of any riprap, to ensure that stone has not been dislodged and that scouring of the support material has not occurred. If the first year inspections verify the integrity of the riprap placement, inspection frequency can be reduced to annually.
- (6) Inspect earthen berms and sediment traps weekly to ensure that the structural integrity of the berms/traps has not been damaged.
- (7) Inspect stockpiles of topsoil and earthen materials weekly to ensure that the slopes are no greater than thirty percent (30%), are seeded and stabilized, and are completely encircled by staked hay bales or silt fence. Stockpiles that are being actively used (i.e. have been used within the last two weeks) are exempted from the seeding requirement.
- (8) Inspect outfalls and discharge locations weekly for evidence of a release of sediment or other pollutants to ensure that their structural integrity has not been breached.

- (9) Inspect locations where vehicles entrance and exit the site weekly for sediment that has been tracked off site. If there is evidence that sediment has been tracked off site, the permittee shall sweep the paved surfaces and determine if the controls require improvement.
- (10) Comprehensive site evaluation: An annual comprehensive site evaluation report must be prepared which summarizes the results of the site inspections, required under I.B.5.c. This report must include the names of the personnel who conducted the inspections, any major or recurring observations noted in the inspections, any maintenance performed on the erosion and sedimentation control measures, a summary of the results of all sediment soundings, and a tabulated summary of all turbidity monitoring. The Annual Comprehensive Site Evaluation report must be submitted to the Department of Environmental Management by January 15 of the following year. The report shall include an updated site plan, unless there have been no changes to the layout (e.g. locations of equipment and buildings, including tenant buildings, and configuration of quarry and processing equipment) of the site in the prior 12 months. If there have been no changes the layout of the site in the prior 12 months, submitting an updated site plan is not required, however a statement indicating that no changes have been made to the layout of the site must be submitted with the comprehensive site evaluation report. The first report is due January 15, 2023.

d. Additional Technology – Based Effluent Limits for the Concrete Plant Activities

- (1) *Good Housekeeping Measures.* With good housekeeping, prevent or minimize the discharge of spilled cement, aggregate (including sand or gravel), kiln dust, fly ash, settled dust, or other significant material in stormwater from paved portions of the site that are exposed to stormwater. Sweep regularly or use other equivalent measures to minimize the presence of these materials. Indicate in the SWPPP the frequency of sweeping or equivalent measures. Determine the frequency based on the amount of industrial activity occurring in the area and the frequency of precipitation, but it must be performed at least once a week if cement, aggregate, kiln dust, fly ash, or settled dust are being handled or processed. The permittee must also prevent the exposure of fine granular solids (cement, fly ash, kiln dust, etc.) to stormwater, where practicable, by storing these materials in enclosed silos, hoppers, or buildings, or under other covering.

e. Technology-Based Effluent Limits for Clearing and Grading Activities

- (1) *Management Practices for Clearing and Grading Activities.*
  - (a) *Selecting and installing control measures.* For all areas affected by clearing and grading activities, the permittee must select, design, install, and implement control measures that meet applicable effluent limits.
  - (b) *Good Housekeeping.* Litter, debris, and chemicals must be prevented from becoming a pollutant source in stormwater discharges.

- (c) *Retention and Detention of Stormwater Runoff.* For drainage locations serving more than one acre, sediment basins and/or temporary sediment traps should be used. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of the development area unless a sediment basin providing storage for a calculated volume of runoff from a 2-year, 24-hour storm or 3,600 cubic feet of storage per acre drained is provided.

(2) *Inspection of Clearing, Grading, and Excavation Activities.*

- (a) *Inspection Frequency.* Inspections must be conducted at least once every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater. Inspection frequency may be reduced to at least once every month if the entire site is temporarily stabilized, if runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or the ground is frozen).
- (b) *Location of Inspections.* Inspections must include all areas of the site disturbed by clearing, grading, and/or excavation activities and areas used for storage of materials that are exposed to precipitation. Sedimentation and erosion control measures implemented must be observed to ensure proper operation. Discharge locations must be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to wetland areas and to waters of the United States, where accessible. Where discharge locations are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site must be inspected for evidence of significant off-site sediment tracking.
- (c) *Inspection Reports.* For each inspection required above, the permittee must complete an inspection report.

f. Additional Technology-Based Effluent Limits

- (1) *Employee Training.* Conduct employee training at least annually
- (2) *Stormwater Controls.* Apart from the control measures the permittee implements to meet the effluent limits, where necessary to minimize pollutant discharges, implement the following control measures at the site. The potential pollutants identified in the SWPPP shall determine the priority and appropriateness of the control measures selected.
- (a) *Stormwater Diversions.* Diverting stormwater away from potential pollutant sources. Following are some control measure options: interceptor or diversion controls (e.g., dikes, swales, curbs, or berms); pipe slope drains; subsurface drains; conveyance systems (e.g., channels or gutters, open-top box culverts, and waterbars; rolling dips and road sloping; roadway surface water deflector and culverts); or their equivalents.

- (b) *Capping*: When capping is necessary to minimize pollutant discharges in stormwater, identify the source being capped and the material used to construct the cap.
  - (c) *Treatment*: If treatment of stormwater (e.g., chemical or physical systems, oil and water separators, artificial wetlands) is necessary to protect water quality, describe the type and location of treatment used.
- g. Consistency with Other Plans. Storm water management controls may reflect requirements for Spill Prevention Control and Counter-measure (SPCC) plans under Section 311 of the CWA or Best Management Practices (BMP) Programs otherwise required by a RIPDES permit and may incorporate any part of such plans into the SWPPP by reference.

**C. DETECTION LIMITS**

All analyses of parameters under this permit must comply with the National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting rule. Only sufficiently sensitive test methods may be used for analyses of parameters under this permit. The permittee shall assure that all wastewater testing required by this permit, is performed in conformance with the method detection limits listed below (the EPA method is noted for reference, other EPA approved methods found in 40 CFR Part 136 may be utilized). In accordance with 40 CFR Part 136, EPA approved analysis techniques, quality assurance procedures and quality control procedures shall be followed for all reports required to be submitted under the RIPDES program. These procedures are described in "Methods for the Determination of Metals in Environmental Samples" (EPA/600/4-91/010) and "Methods for Chemical Analysis of Water and Wastes" (EPA/600/4-79/020).

The report entitled "Methods for the Determination of Metals in Environmental Samples" includes a test which must be performed in order to determine if matrix interferences are present, and a series of tests to enable reporting of sample results when interferences are identified. Each step of the series of tests becomes increasingly complex, concluding with the complete Method of Standard Additions analysis. The analysis need not continue once a result which meets the applicable quality control requirements has been obtained. Documentation of all steps conducted to identify and account for matrix interferences shall be submitted along with the monitoring reports.

If, after conducting the complete Method of Standard Additions analysis, the laboratory is unable to determine a valid result, the laboratory shall report "could not be analyzed". Documentation supporting this claim shall be submitted along with the monitoring report. If valid analytical results are repeatedly unobtainable, DEM may require that the permittee determine a method detection limit (MDL) for their effluent or sludge as outlined in 40 CFR Part 136, Appendix B.

Therefore, all sample results shall be reported as: an actual value, "could not be analyzed", less than the reagent water MDL, or less than an effluent or sludge specific MDL. The effluent or sludge specific MDL must be calculated using the methods outlined in 40 CFR Part 136, Appendix B. Samples which have been diluted to ensure that the sample concentration will be within the linear dynamic range shall not be diluted to the extent that the analyte is not detected. If this should occur the analysis shall be repeated using a lower degree of dilution.

When calculating sample averages for reporting on discharge monitoring reports (DMRs):

1. "could not be analyzed" data shall be excluded, and shall not be considered as failure to comply with the permit sampling requirements;
2. results reported as less than the MDL shall be reported as zeros.



**LIST OF TOXIC POLLUTANTS**

The following list of toxic pollutants has been designated pursuant to Section 307(a)(1) of the Clean Water Act. The Method Detection Limits (MDLs) represent the required Rhode Island MDLs.

(Updated: March 28, 2000)

<b>Volatiles - EPA Method 624</b>		<b>MDL ug/l (ppb)</b>			
1V	acrolein	10.0	21P	PCB-1232	0.387
2V	acrylonitrile	5.0	22P	PCB-1248	0.283
3V	benzene	1.0	23P	PCB-1260	0.222
5V	bromoform	1.0	24P	PCB-1016	0.494
6V	carbon tetrachloride	1.0	25P	toxaphene	1.670
7V	chlorobenzene	1.0			
8V	chlorodibromomethane	1.0		<b>Base/Neutral - EPA Method 625</b>	<b>MDL ug/l (ppb)</b>
9V	chloroethane	1.0	1B	acenaphthene *	1.0
10V	2-chloroethylvinyl ether	5.0	2B	acenaphthylene *	1.0
11V	chloroform	1.0	3B	anthracene *	1.0
12V	dichlorobromomethane	1.0	4B	benzidine	4.0
14V	1,1-dichloroethane	1.0	5B	benzo(a)anthracene *	2.0
15V	1,2-dichloroethane	1.0	6B	benzo(a)pyrene *	2.0
16V	1,1-dichloroethylene	1.0	7B	3,4-benzofluoranthene *	1.0
17V	1,2-dichloropropane	1.0	8B	benzo(ghi)perylene *	2.0
18V	1,3-dichloropropylene	1.0	9B	benzo(k)fluoranthene *	2.0
19V	ethylbenzene	1.0	10B	bis(2-chloroethoxy)methane	2.0
20V	methyl bromide	1.0	11B	bis(2-chloroethyl)ether	1.0
21V	methyl chloride	1.0	12B	bis(2-chloroisopropyl)ether	1.0
22V	methylene chloride	1.0	13B	bis(2-ethylhexyl)phthalate	1.0
23V	1,1,2,2-tetrachloroethane	1.0	14B	4-bromophenyl phenyl ether	1.0
24V	tetrachloroethylene	1.0	15B	butylbenzyl phthalate	1.0
25V	toluene	1.0	16B	2-chloronaphthalene	1.0
26V	1,2-trans-dichloroethylene	1.0	17B	4-chlorophenyl phenyl ether	1.0
27V	1,1,1-trichloroethane	1.0	18B	chrysene *	1.0
28V	1,1,2-trichloroethane	1.0	19B	dibenzo (a,h)anthracene *	2.0
29V	trichloroethylene	1.0	20B	1,2-dichlorobenzene	1.0
31V	vinyl chloride	1.0	21B	1,3-dichlorobenzene	1.0
			22B	1,4-dichlorobenzene	1.0
			23B	3,3 <sup>1</sup> -dichlorobenzidine	2.0
			24B	diethyl phthalate	1.0
			25B	dimethyl phthalate	1.0
			26B	di-n-butyl phthalate	1.0
			27B	2,4-dinitrotoluene	2.0
			28B	2,6-dinitrotoluene	2.0
			29B	di-n-octyl phthalate	1.0
			30B	1,2-diphenylhydrazine (as azobenzene)	1.0
			31B	fluoranthene *	1.0
			32B	fluorene *	1.0
			33B	hexachlorobenzene	1.0
			34B	hexachlorobutadiene	1.0
			35B	hexachlorocyclopentadiene	2.0
			36B	hexachloroethane	1.0
			37B	indeno(1,2,3-cd)pyrene *	2.0
			38B	isophorone	1.0
			39B	naphthalene *	1.0
			40B	nitrobenzene	1.0
			41B	N-nitrosodimethylamine	1.0
			42B	N-nitrosodi-n-propylamine	1.0
			43B	N-nitrosodiphenylamine	1.0
			44B	phenanthrene *	1.0
			45B	pyrene *	1.0
			46B	1,2,4-trichlorobenzene	1.0
<b>Acid Compounds - EPA Method 625</b>		<b>MDL ug/l (ppb)</b>			
1A	2-chlorophenol	1.0			
2A	2,4-dichlorophenol	1.0			
3A	2,4-dimethylphenol	1.0			
4A	4,6-dinitro-o-cresol	1.0			
5A	2,4-dinitrophenol	2.0			
6A	2-nitrophenol	1.0			
7A	4-nitrophenol	1.0			
8A	p-chloro-m-cresol	2.0			
9A	pentachlorophenol	1.0			
10A	phenol	1.0			
11A	2,4,6-trichlorophenol	1.0			
<b>Pesticides - EPA Method 608</b>		<b>MDL ug/l (ppb)</b>			
1P	aldrin	0.059			
2P	alpha-BHC	0.058			
3P	beta-BHC	0.043			
4P	gamma-BHC	0.048			
5P	delta-BHC	0.034			
6P	chlordane	0.211			
7P	4,4 <sup>1</sup> -DDT	0.251			
8P	4,4 <sup>1</sup> -DDE	0.049			
9P	4,4 <sup>1</sup> -DDD	0.139			
10P	dieldrin	0.082			
11P	alpha-endosulfan	0.031			
12P	beta-endosulfan	0.036			
13P	endosulfan sulfate	0.109			
14P	endrin	0.050			
15P	endrin aldehyde	0.062			
16P	heptachlor	0.029			
17P	heptachlor epoxide	0.040			
<b>Pesticides - EPA Method 608</b>		<b>MDL ug/l (ppb)</b>			
18P	PCB-1242	0.289			
19P	PCB-1254	0.298			
20P	PCB-1221	0.723			

Material Sand and Stone final 2022 RIPDES permit

**OTHER TOXIC POLLUTANTS**  
**Updated: March 28, 2000**

	<b>MDL ug/l (ppb)</b>
Antimony, Total	3.0 - EPA Method 204.2 <sup>1</sup>
Arsenic, Total	1.0 - EPA Method 206.2 <sup>1</sup>
Beryllium, Total	0.2 - EPA Method 210.2 <sup>1</sup>
Cadmium, Total	0.1 - EPA Method 213.2 <sup>1</sup>
Chromium, Hexavalent****	20.0 - Standard Methods 16 <sup>th</sup> Ed., 312.B
Copper, Total	1.0 - EPA Method 220.2 <sup>1</sup>
Lead, Total	1.0 - EPA Method 239.2 <sup>1</sup>
Mercury, Total	0.2 - EPA Method 245.1 <sup>1</sup>
Nickel, Total	1.0 - EPA Method 249.2 <sup>1</sup>
Selenium, Total	2.0 - EPA Method 270.2 <sup>1</sup>
Silver, Total	0.5 - EPA Method 200.9 <sup>1</sup>
Thallium, Total	1.0 - EPA Method 279.2 <sup>1</sup>
Zinc, Total	20.0 - EPA Method 200.7
Asbestos	**
Cyanide, Total	10.0 - EPA Method 335.3
Phenols, Total***	50.0 - EPA Method 420.2
TCDD	**
MTBE (Methyl Tert Butyl Ether)	1.0 - EPA Method 524.2

\* Polynuclear Aromatic Hydrocarbons

\*\* No Rhode Island Department of Environmental Management (RIDEM) MDL

\*\*\* Not a priority pollutant as designated in the 1997 Water Quality Regulations (Table 5)

**NOTE:**

All MDLs have been established in accordance with the definition of "Detection Limits" in the RIDEM Water Quality Regulations for Water Pollution Control. Unless otherwise noted the MDLs have been determined in reagent water by the Rhode Island Department of Health, Division of Laboratories. The MDL for a given analyte may vary with the type of sample. MDLs which are determined in reagent water may be lower than those determined in wastewater due to fewer matrix interferences. Wastewater is variable in composition and may therefore contain substances (interferents) that could affect MDLs for some analytes of interest. Variability in instrument performance can also lead to inconsistencies in determinations of MDLs.

<sup>1</sup>Method detection limits for these metals analyses were determined by the USEPA. They are not contrived values and should be obtainable with any satisfactory atomic absorption spectrophotometer. To insure valid data the analyst must analyze for matrix interference effects and if detected treat accordingly using either successive dilution matrix modification or method of Standard Additions (Methods for Chemical Analysis of Water and Wastes EPA-600/4-79/020).

To help verify the absence of matrix or chemical interference the analyst is required to complete specific quality control procedures. For the metals analyses listed above the analyst must withdraw from the sample two equal aliquots; to one aliquot add a known amount of analyte, and then dilute both to the same volume and analyze. The unspiked aliquot multiplied by the dilution factor should be compared to the original. Agreement of the results within 10% indicates the absence of interference. Comparison of the actual signal from the spiked aliquot to the expected response from the analyte in an aqueous standard should help confirm the finding from the dilution analysis. (Methods for Chemical Analysis of Water and Wastes EPA-600/4-79/020).

For Methods 624 and 625 the laboratory must on an ongoing basis, spike at least 5% of the samples from each sample site being monitored. For laboratories analyzing 1 to 20 samples per month, at least one spiked sample per month is required. The spike should be at the discharge permit limit or 1 to 5 times higher than the background concentration determined in Section 8.3.2, whichever concentration would be larger. (40 CFR Part 136 Appendix B Method 624 and 625 subparts 8.3.1 and 8.3.11).

#### D. MONITORING AND REPORTING

##### 1. Monitoring

All monitoring required by this permit shall be done in accordance with sampling and analytical testing procedures specified in 40 CFR Part 136 unless other procedures are explicitly required in the permit.

##### 2. Reporting

Unless otherwise specified in this permit, the permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

##### a. Submittal of DMRs Using NetDMR

The permittee shall submit its monitoring data in discharge monitoring reports (DMRs) to DEM electronically using NetDMR per the following schedule:

<u>Quarter Testing to be Performed</u>	<u>Report Due No Later Than</u>	<u>Results Submitted on DMR for</u>
January 1 - March 31	April 15	January 1 - March 31
April 1 - June 30	July 15	April 1 - June 30
July 1 - September 30	October 15	July 1 - September 30
October 1 - December 31	January 15	October 1-December 31

When the permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to DEM.

##### b. Submittal of Reports as NetDMR Attachments

Unless otherwise specified in this permit, the permittee must submit electronic copies of documents in NetDMR that are directly related to the DMR. These include the following:

- DMR Cover Letters
- Below Detection Limit summary tables

c. Submittal of Reports in Hard Copy Form

The following notifications and reports shall be submitted as hard copy with a cover letter describing the submission. These reports shall be signed and dated originals submitted to DEM:

- Annual Comprehensive Site Inspection Report required under Part I.b.5.c.10.
- Written notifications required under Part II
- Notice of unauthorized discharges

This information shall be submitted to DEM at the following address:

Rhode Island Department of Environmental Management  
RIPDES Program  
235 Promenade Street  
Providence, Rhode Island 02908

d. Verbal Reports and Verbal Notifications

Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit, shall be made to the DEM. This includes verbal reports and notifications which require reporting within 24 hours. (See Part II.(I)(5) General Requirements for 24-hour reporting) Verbal reports and verbal notifications shall be made to DEM at (401) 222-4700 or (401) 222-3070 at night.

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
235 PROMENADE STREET  
PROVIDENCE, RHODE ISLAND 02908-5767

**STATEMENT OF BASIS**

RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM (RIPDES) PERMIT TO DISCHARGE  
TO WATERS OF THE STATE

**RIPDES PERMIT NO. RI0024007**

**NAME AND ADDRESS OF APPLICANT:**

**Material Sand and Stone Corporation  
618 Greenville Road  
North Smithfield, RI 02896**

**NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:**

**Material Sand and Stone Corporation  
618 Greenville Road  
North Smithfield, RI 02896**

**RECEIVING WATER: Woonasquatucket River and  
Unnamed Wetland Tributary to the Woonasquatucket River  
WBID: RI0002007R-10A**

**CLASSIFICATION: B**

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## I. Proposed Action, Type of Facility, and Discharge Location

Material Sand and Stone Corporation (MSSC) has applied to the Rhode Island Department of Environmental Management for issuance of a RIPDES Permit to discharge into the designated receiving water. The facility is located at 618 Greenville Road in North Smithfield and is engaged in construction sand and gravel production and the production of asphalt paving mixtures. The facility submitted a RIPDES permit application to DEM on June 8, 2020.

MSSC occupies a 104.6-acre parcel of land. The land is extensively disturbed as a result of past and present gravel pit operations. The Woonasquatucket River and associated wetlands border the northern and western property line. Other water bodies and wetlands exist to the east and south on the parcel.

According to the facility's RIPDES Permit application, only the stationary rock crushing and stone washing operations result in process wastewater discharges to the wetlands draining to the Woonasquatucket River. The rock crushing operation operates up to 6 days per week, 7:00 AM to 5:00 PM, Monday through Friday, and 7:00 AM to 3:00 PM on Saturday. The stone washing process is an intermittent operation, occurring from April to December, weather permitting, and uses water withdrawn from the Woonasquatucket River as intake to the process. A pump station along the Woonasquatucket River pumps water at a flowrate of 800 – 1,000 gpm for stone washing, with the spent wash water discharged via a pipeline to a series of sedimentation basins. Wash water pumping occurs for 4-10 hours per day. Storm water at the site is managed by a number of control measures such as berms, infiltration trenches and retention basins. During average precipitation, storm water is contained entirely on the site. However, based on a site survey and site drainage calculations, storm water discharge at Outfall # 002 could occur during a 5-year storm event.

Two additional businesses operate on the site: Material Concrete Corp. and Materials Equipment Corp. The ready-mix concrete operation from Material Concrete Corp. has no process discharge, and all storm water is managed in two retention ponds and infiltration basins. Materials Equipment Corp. has no process discharge, and storm water in the equipment yard is directed to a catch basin which drains to two oil-water separators and an infiltration basin.

The MSS Corporation includes the following areas, as shown in Attachment A1 (facility site plan) and Attachment A2 (facility site plan detail). (Note: The only areas with discharges to surface waters are the Stone Washing and Material Storage and Processing areas, through outfalls 001 and 002, respectively):

*Stone Washing (Area E)* - This area consists of the stationary crushing operation which uses water from the Woonasquatucket River for stone washing. A pump house along the river provides water for the stone washing pumping at a flowrate of approximately 800 to 1,000 gpm. The spent wash water discharges to a series of three (3) large basins followed by three (3) smaller basins for solids removal, with overflow ultimately discharging to the wetlands to the south of the operation at Outfall #001. Solids recovered in the sedimentation basins are periodically excavated from the basins and utilized as Reclaimed, Recycled Gravel.

*Material Storage and Processing (Area A)* – This area, in the northwestern portion of the facility, includes storage of raw construction materials and finished products associated with the sand and gravel operation. The raw materials are recovered construction sand, stone, gravel, concrete and asphalt which are trucked in to the facility on the dirt roadways in this area of the site. The method of storage consists of open piles in the facility yard, and the piles are routinely relocated as needed. Finished product sand, stone, and gravel are also stored in this area. The majority of the site perimeter in this area is bordered with earthen berms with collection and infiltration trenches constructed for storm water management. The drainage in this area flows in a northerly direction. At the northern most portion of the site, Outfall #002 exists beyond a double earthen berm. Storm water discharge at this location is infrequent, occurring only during 5-year storm events or greater, according to stormwater modeling.

*Office and Equipment Yard (Area H)* – This area consists of the entrance on the western side of the property and includes an office building, associated parking lot, main mechanic garage, and equipment parking. The mechanic garage houses two 275-gallon hydraulic oil tanks, 55-gallon drums of hydraulic oil, a 275-gallon tank of motor oil, and a 275-gallon tank of heating oil for heat and hot water. All tanks are within the building and are equipped with secondary containment. Outside of the garage is a 4800-gallon fuel tank with secondary containment. Berms and grading divert storm water runoff from the paved truck parking lot surrounding the office building to a catch basin. The catch basin discharges to two (2) oil-water separators, operating in series, for removal of floatable and residual petroleum material. The oil-water separators discharge to two (2) retention ponds in series and ultimately into an infiltration basin. A private well provides potable water to the office area.

*Portable Crusher (Area B)* – This area is the location of the portable crushing operation and does not include any stone washing. Water from the South Pond is utilized at both the portable and stationary rock crushing operations in the wet suppression systems to control both dust and particles from the process. The crusher operation utilizes a 275-gallon diesel fuel tank which is equipped with secondary containment. Storm water in the western portion of the crushing operation is directed to infiltration trenches, with no discharge to the surface waters, while drainage from the eastern portion is graded toward the asphalt operation which is ultimately contained onsite by earthen berms.

*Asphalt Plant (Area C)* – This area lies further to the east on the site and consists of a 180 TPH asphalt batch plant and associated raw material piles. Currently there are two large outdoor storage tanks integral to the asphalt plant, including a 10,000-gallon No. 2 fuel oil tank and a 20,000-gallon hot asphalt product tank. Both of these tanks are located within dedicated concrete containment areas. A private well provides non-potable water for operations. This operation began in 2018, and no storm water is discharged to a receiving water body since earthen berms contain the storm water in this drainage area.

*Concrete Plant (Area F)* – This area is located south of the stationary crusher, in the central portion of the site. Two silos store cement for the concrete and slag cement products. The operation includes two outdoor plastic calcium chloride tanks; one has a capacity of 750-gallons and the other 800-gallons. Calcium chloride can also be delivered in plastic tote containers and may be located on the loading dock. No containment is provided for the liquid calcium chloride. In addition, there are three No. 2 fuel oil tanks, two 250-gallon tanks which are covered, and one 275-gallon tank. All three of these tanks are located within a containment berm. This facility does not use colorant and is primarily a dry operation. The ready-mix plant is powered by electricity. There is a plant loading area, an approximately 225-foot long concrete approach slab (14,865 square feet) running from the loading area to the entrance, two concrete retention ponds, and an infiltration basin. The two concrete retention ponds and infiltration basin are designed to manage storm water flow and remove solids, thereby preventing discharge to the river or wetlands. In addition, a 12-foot by 14-foot concrete grated truck rinse basin is provided to remove any dust or spillage from the loading operation. The water from the truck rinse basin remains in the basin, and evaporates over time, while the solids are cleaned out and re-crushed and sold as Reclaimed, Recycled Gravel. A well exists at the concrete plant to provide non-potable water to the operations.

*Truck Washout (Area D)* – This area is east of the asphalt plant and is the truck washing area where concrete mixer trucks proceed for clean out and rinsing. Water from the trucks and the private well at the concrete plant is utilized for the truck washing. Two shallow above ground retention ponds capture the water and solids from this activity. The water evaporates either in the retention pond or is transferred to an adjacent shallow basin. The perimeter of this area is bermed, therefore no rinse water or storm water is discharged to surface waters. Solids are recovered for reuse as Reclaimed, Recycled Gravel.

*Brush Disposal (Area G)* - This area, in the southwestern corner of the site, is a former quarry pond that has naturalized. This region of the site also contains a large tract of



undeveloped land and wetlands. Some storage of finished concrete goods or vegetative debris has historically taken place in this area. Access is through dirt roadways. This area of the site is bermed and does not have a discharge to surface waters.

In addition, the site includes the following areas:

*Cullion Concrete Plant* - South of the MSS Concrete plant lies the Cullion concrete plant. The Cullion property is a 3-acre lot with some impervious surface. It is surrounded entirely by MSSC property, and is a completely separate legal and business entity and operation. The grade in this area slopes downward and in a northwesterly to southwesterly direction both toward the Woonasquatucket River and the MSSC property. A portion of the storm water from the Cullion operation currently runs onto the MSSC property, and into the MSSC retention basin.

*Material Equipment Corporation* - Material Equipment Corporation is also located at the facility. This entity has no process discharge. Stormwater from the equipment yard at this entity is directed to catch basin which drains to two oil-water separators and an infiltration basin.

Site layout and process flow diagrams for the facility are shown in Attachments A1/A2 and B respectively.

## **II. Description of Discharge**

The discharges to the Woonasquatucket River consist of discharges of stormwater and stonewash wastewater from outfall 001 to a wetland which ultimately discharges to the Woonasquatucket River, and of stormwater from the material storage and processing area to the river from outfall 002. The discharge from outfall 001 is treated using a series of sedimentation basins.

Based on a review of available effluent data submitted with the most recent permit application, the facility may not be able to comply with final permit limits for Total Suspended Solids and Total Iron at Outfall 001. The facility's ability to comply with permit limits for outfall 002 is unknown due to a lack of effluent data for this outfall. The lack of effluent data for outfall 002 is due to the facility not having had a discharge during the time the RIPDES Permit application was being prepared.

Part I.B. of the draft permit requires that the facility submit a Storm Water Pollution Prevention Plan (SWPPP) to DEM within 30 (thirty) days of the effective date of the final permit.

Although the facility is proposing to construct treatment ponds to improve effluent treatment compared to performance of the current ponds, the treatment ponds which the facility is proposing to construct are only anticipated to lower effluent TSS levels to 41 mg/L, as compared with permit limits of 25 mg/L monthly average for TSS. Therefore, the facility will need to revise the proposed treatment system to meet the final TSS limits for outfall 001. The facility did include Preventative Maintenance Plan and logs for 2007-2019 with the permit application for the facility. These logs contained pH data for the sedimentation basins. Of those logs which contained legible data, the legible pH data appeared to be with the range of the pH limits for the facility most of the time. Therefore, DEM does not anticipate that a schedule will be necessary at Outfall 001 for pH. The facility's effluent Total Iron concentration of 1540 ug/L (1.54 mg/L) for outfall 001 exceeds the potential monthly average permit limit of 800 ug/L (0.800 mg/L) for Total Iron, and the facility's effluent Total Zinc concentration of 30 ug/L exceeds the potential monthly average and maximum daily limits of 29.7 ug/L therefore, DEM anticipates that a Treatment Upgrade will be necessary for Outfall 001 for Total Iron.

## **III. Permit Limitations and Conditions**

The final effluent limitations and monitoring requirements may be found in the permit.

#### **IV. Permit Basis and Explanation of Effluent Limitation Derivation**

##### **Variances, Alternatives, and Justifications for Waivers of Application Requirements**

No variances or alternatives to required standards were requested or granted.

##### **Receiving Water Description**

The water body segment for the Woonasquatucket River that receives the above-mentioned discharges is RI0002007R-10A. RI0002007-R10A is located in Smithfield and North Smithfield, and is delineated by the Woonasquatucket River headwaters including tributaries to Georgiaville Pond, excluding reservoirs and ponds. The State of Rhode Island 2018-2020 Impaired Waters Report (dated February 2021) lists the water body as not supporting Fish and Wildlife habitat due to Zinc. Additionally, this segment is listed for not supporting Primary Contact Recreation or Secondary Contact Recreation due to enterococcus. This segment has as TMDL for Zinc approved as of July 3, 2007. The 2007 TMDL proposed site-specific water quality criteria for Zinc the water body segment based upon a specific hardness value for the water body segment. The site-specific hardness value of 21.8 mg/L as CaCO<sub>3</sub> was used in the water quality calculations.

This segment of the Woonasquatucket River is designated as a warm water habitat for fisheries and has a Waterbody Classification of B. Class B waters are designated for fish and wildlife habitat and primary and secondary contact recreational activities. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value.

##### **Permit Limit Development**

The requirements set forth in this permit are from the State's Water Quality Regulations and the State's Regulations for the Rhode Island Pollutant Discharge Elimination System, both filed pursuant to RIGL Chapter 46-12, as amended. RIDEM's primary authority over the permit comes from EPA's delegation of the program in September 1984 under the Federal Clean Water Act (CWA).

Development of RIPDES permit limitations is a multi-step process consisting of: determining if Federal effluent guidelines apply; calculation of allowable water quality-based discharge levels based on background data and available dilution; assigning appropriate Best Professional Judgement (BPJ) based limits; comparing existing and proposed limits; comparing discharge data to proposed limits; performing an antidegradation/antibacksliding analysis to determine the final permit limits; and developing interim limits as appropriate.

Water quality criteria are comprised of numeric and narrative criteria. Numeric criteria are scientifically derived ambient concentrations developed by EPA or the State for various pollutants of concern to protect human health and aquatic life. Narrative criteria are statements that describe the desired water quality goal. A technology-based limit is a numeric limit, which is determined by examining the capability of a treatment process to reduce or eliminate pollutants.

pH:

The Effluent Guidelines for the Mineral Mining and Processing Point Source Category located at 40 CFR Part 436 establish limitations for pH for effluent discharged in conjunction with mine dewatering associated with sand and gravel production as 6.0-9.0 standard units. These Effluent Guidelines were applied due to the site receiving mined materials.

The effluent guidelines for the asphalt concrete subcategory located at 40 CFR Part 443.25 prohibit the discharge of asphalt concrete process water. Therefore, this permit does not authorize the discharge of asphalt plant wastewater since it is a prohibited discharge under 40 CFR Part 443.25. This prohibition is made in Part I.A.7. of the permit.

#### Total Suspended Solids (TSS):

RIPDES Permits for similar facilities to MSSC contain TSS limits of 45 mg/L maximum daily and 25 mg/L monthly average for outfalls that discharge rock crushing and processing wastewater. These limits are consistent with the limits for mine dewatering discharges at industrial sand and mining facilities from DEM's 2019 Multi-Sector General Permit for Stormwater Associated with Industrial Activity (MSGP). Therefore, TSS limitations of 45 mg/L and 25 mg/L were written into MSSC's permit for outfall 001 based upon Best Professional Judgement due to the site receiving mined materials.

For outfall 002, which is expected to consist exclusively of stormwater and is only expected to discharge during 5-year storm or greater, no TSS limits were written into the permit due to the expectation that process water would not be discharged through outfall 002. However, TSS monitoring was written into the permit, and a benchmark for TSS of 100 mg/L from the 2019 MSGP was also written into the permit.

#### Additional Technology-Based Requirements

The technology-based conditions listed in Part I.B.5.d-f. of the permit are based on and consistent with the 2019 RIPDES Multi-Sector General Permit for Industrial Stormwater. The technology based limits included in this section of the permit consist of control measures to prevent or reduce pollution of stormwater. The permittee is required to select, design, install, and implement site-specific control measures to meet these technology-based limits.

#### Best Professional Judgement

##### Flow Monitoring:

Facility's design flow of 0.637 MGD was calculated by adding the maximum daily flow rates for outfall 001 listed on the permit application. However, no limitations were placed on average monthly flow or maximum daily flow for either outfall, in order to permit stormwater flow, which is variable. Flow monitoring is specified for both outfalls.

#### Water Quality-Based Requirements

##### Water Quality-Based Limit (WQBEL) Calculations

The allowable effluent limitations were established on the basis of acute and chronic aquatic life criteria and human health criteria using the following: available instream dilution; an allocation factor; and background concentrations when available and/or appropriate. The aquatic life and human health criteria are specified in the Rhode Island Water Quality Regulations (250-RICR-150-05-1). Aquatic life criteria have been established to ensure the protection and propagation of aquatic life while human health criteria represent the pollutant levels that would not result in a significant risk to public health from ingestion of aquatic organisms. The more stringent of the two criteria was then used in establishing allowable effluent limitations. Details concerning the calculation of potential permit limitations, selection of factors, which influence their calculation, and the selection of final permit limitations are included below or in the attached documents.

##### Mixing Zones and Dilution Factors

Since Outfall 001 is the only discharge that receives process wastewater discharges, dilution must be determined for this outfall in order to assign water quality-based limits.

Since the discharge from this outfall is to a wetland, which is adjacent to the Woonasquatucket River, the dilution factor for the facility the dilution factor for this outfall is 1 (i.e., no dilution).

##### Hardness

DEM used the site-specific hardness of 21.8 mg/L which was developed by DEM and published

in DEM's 2007 TMDL for water body segment RI0002007R-10A of the Woonasquatucket River.

#### Limits Calculations

Using the above dilution factor and hardness, the allowable discharge limits were calculated as follows:

Background concentration unknown or available data is impacted by sources that have not yet achieved water quality-based limits.

$$\text{Limit} = (\text{DF}) * (\text{Criteria}) * (80\%)$$

Where: DF = acute or chronic dilution factor, as appropriate

The background data for Aluminum, Cadmium, Copper, Lead, Ammonia, pH, and Zinc that was used to develop potential permit limits was taken from URI Watershed Watch and DEM Ambient River Monitoring data. The data spanned the years 2010-2019. Reference Attachment C for calculations of allowable limits based on Aquatic Life and Human Health Criteria. Also reference Attachment C for background data for Aluminum, Cadmium, Copper, Lead, Ammonia, pH, and Zinc.

The formulas and data noted above were applied with the following exceptions:

- I. Pollutants that, based on the acute and chronic dilution factors, have a higher allowable chronic limit than allowable acute limit. For this situation, both the "Monthly Average" and "Daily Maximum" limits were set at the allowable acute limit.
- II. Total residual chlorine. The limits for total residual chlorine (TRC) were established in accordance with the RIDEM Effluent Disinfection Policy. The "Monthly Average" and "Daily Maximum" were based on a 100% allocation, a zero background concentration, and the appropriate dilution factor(s). The 100% allocation factor for TRC was used due to the non-conservative nature of chlorine and the improbability of the receiving water having a detectable background TRC concentration.

In accordance with 40 CFR Part 122.4(d)(1)(iii), it is only necessary to establish limitations for those pollutants in the discharge which have the reasonable potential to cause or contribute to the exceedance of the in-stream criteria. In order to evaluate the need for permit limitations, the allowable discharge levels (permit limits) were compared to data provided in the permit application. An assessment was made to determine if limits were necessary, using the data provided in the permit application. Based on these comparisons, water quality limitations have been deemed necessary for Total Zinc for Outfall 001 and for Total Iron for Outfall 001 since there is "reasonable potential" for permit exceedances for these parameters.

Since outfall 002 does not contain process wastewater and only discharges during large storm events, numeric water quality based limits were not calculated for this outfall. However, since the Woonasquatucket is impaired for Zinc, Total Zinc monitoring has been included for this outfall to quantify the Zinc load.

#### Nitrate + Nitrite:

Benchmarks for Nitrate + Nitrite Nitrogen of 0.68 mg/l are incorporated into monitoring for outfalls 001 and 002 based on the 2019 Rhode Island Multi-Sector General Permit for Stormwater, which specifies such benchmarks for the Sand and Gravel Mining Activities. Although the facility is no longer involved in blasting on the site, these pollutants are believed present due to the presence of Nitrogen-containing compounds as a result of rock blasting performed to extract materials transported to the facility for processing.

## Bacteria

Because the water body segment is listed as not supporting Primary Contact Recreation or Secondary Contact Recreation due to enterococcus, monthly average enterococcus monitoring has been written into the permit for both outfalls.

## Perchlorate:

Perchlorate monitoring for both outfalls has been incorporated into the permit based on this substance being present in rock blasting compounds, which, as mentioned above, may be present in material brought to the facility for processing.

## Whole Effluent Toxicity (WET) Testing:

No WET testing is being required in the permit because the existing and new permit conditions and permit limits are protective of the receiving water.

## Nutrients:

As noted above, permit monitoring for Nitrate + Nitrite Nitrogen has been added to the permit draft due to the expectation that Nitrate + Nitrite Nitrogen may be in water discharged from the quarry due to the possible presence of blasting compounds in material brought to the site for processing.

## Antibacksliding

Provided below is a brief introduction to Antibacksliding and Antidegradation; as well as a discussion on how the two policies were used to calculate water quality-based limits.

Antibacksliding restricts the level of relaxation of water quality-based limits from the previous permit. Section 303(d)(4) of the Clean Water Act addresses antibacksliding as the following:

### *Section 303(d)(4)*

1. Standards not attained – For receiving waters that have not attained the applicable water quality standards, limits based on a TMDL or WLA can only be revised if the water quality standards will be met. This may be done by (i) determining that the cumulative effect of all such revised limits would assure the attainment of such water quality standards; or (ii) removing the designated use which is not being attained in accordance with regulations under Section 303.
2. Standards attained – For receiving waters achieving or exceeding applicable water quality standards, limits can be relaxed if the revision is consistent with the State's Antidegradation Policy.

Therefore, in order to determine whether backsliding is permissible, the first question that must be asked is whether or not the receiving water is attaining the water quality standard. The Office has determined the most appropriate evaluation of existing water quality is by calculating pollutant levels, which would result after the consideration of all currently valid RIPDES permit limits or historic discharge data (whichever is greater), background data (when available), and any new information (i.e., dilution factors).

## Antidegradation

The DEM's "*Policy on the Implementation of the Antidegradation Provisions of the Rhode Island Water Quality Regulations July 2006*" (the Policy) established four tiers of water quality protection:

**Tier 1.** In all surface waters, existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

**Tier 2.** In waters where the existing water quality criteria exceeds the levels necessary to support the propagation of fish and wildlife and recreation in and on the water, that quality shall be maintained and protected except for insignificant changes in water quality as determined by the Director and in accordance with the Antidegradation Implementation Policy, as amended. In addition, the Director may allow significant degradation, which is determined to be necessary to achieve important economic or social benefits to the State in accordance with the Antidegradation Policy.

**Tier 2½.** Where high quality waters constitute Special Resource Protection Waters SRPWs<sup>1</sup>, there shall be no measurable degradation of the existing water quality necessary to protect the characteristics which cause the waterbody to be designated a SRPW. Notwithstanding that all public drinking water supplies are SRPWs, public drinking water suppliers may undertake temporary and short-term activities within the boundary perimeter of a public drinking water supply impoundment for essential maintenance or to address emergency conditions in order to prevent adverse effect on public health or safety. These activities must comply with the requirements set forth in Tier 1 and Tier 2.

**Tier 3.** Where high quality waters constitute an Outstanding Natural Resource ONRWs<sup>2</sup>, that water quality shall be maintained and protected. The State may allow some limited activities that result in temporary or short-term changes in the water quality of an ONRW. Such activities must not permanently degrade water quality or result in water quality lower than necessary to protect the existing uses in the ONRW.

The formulas previously presented ensure that permit limitations are based upon water quality criteria and methodologies established to ensure that all designated uses will be met.

In terms of the applicability of Tier 2 of the Policy, a water body is assessed as being high quality on a parameter-by-parameter basis. In accordance with Part II of the Policy, "Antidegradation applies to all new or increased projects or activities which may lower water quality or affect existing water uses, including but not limited to all 401 Water Quality Certification reviews and any new, reissued, or modified RIPDES permits." Part VI.A of the Policy indicates that it is not applicable to activities which result in insignificant (i.e., short-term minor) changes in water quality and that significant changes in water quality will only be allowed if it is necessary to accommodate important economic and social development in the area in which the receiving waters are located (important benefits demonstration). Part VI.B.4 of the Policy states that: "Theoretically, any new or increased discharge or activity could lower existing water quality and thus require the important benefits demonstration. However, DEM will: 1) evaluate applications on a case-by-case basis, using BPJ and all pertinent and available facts, including scientific and technical data and calculations as provided by the applicant; and 2) determine whether the incremental loss is significant enough to require the important benefits demonstration described below. [If not then as a general rule DEM will allocate no more than 20%.] Some of the considerations which will be made to determine if an impact is significant in each site specific decision are: 1) percent change in water quality parameter value and their temporal distribution; 2) quality and value of the resource; 3) cumulative impact of discharges and activities on water quality to date; 4) measurability of the change; 5) visibility of the change; 6) impact on fish and wildlife habitat; and 7) impact on potential and existing uses. As a general guide, any discharge or activity which consumes greater than 20% of the remaining assimilative capacity may be deemed significant and invoke full requirements to demonstrate important economic or social benefits."

In terms of a RIPDES permit, an increased discharge is defined as an increase in any limitation, which would result in an increased mass loading to a receiving water. The baseline for this comparison would be the monthly average mass loading established in the previous permit. It would be inappropriate to use the daily maximum mass loading since the Policy is not applicable to short-term changes in water quality.

For the purposes of ensuring that the revised limit is consistent with the requirements of antidegradation, existing water quality must be defined. As explained earlier, DEM evaluates existing water quality by determining the pollutant levels which would result under the design conditions

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<sup>1</sup> SRPWs are surface waters identified by the Director as having significant recreational or ecological uses.

<sup>2</sup> ONRWs are a special subset of high-quality water bodies, identified by the State as having significant recreational or ecological water uses.

appropriate for the particular criteria (i.e., background water quality, when available and/or appropriate, non-point source inputs; and existing RIPDES permit limitations or recent historical discharge data, whichever is higher). In general, available data would be used to make this determination.

Use the above-mentioned criteria, the present instream water quality  $C_p$  is defined as:

$$C_p = \frac{(DF - 1) \cdot C_b + (1 \cdot C_d)}{DF}$$

where:  $C_b$  = background concentration<sup>3</sup>

$C_d$  = discharge data<sup>4</sup>

DF = dilution factor

This draft permit is a new permit with no former permit limits. Therefore anti-backsliding does not apply to this permit. In addition, since the facility's discharge is an existing discharge and the facility is not proposing to discharge new effluent which would lead to further impairments or degradation of the water body compared to existing conditions, the limits contained in this permit are consistent with the Department's anti-degradation policy because they restrict the historic levels of pollutants discharged.

The remaining general and specific conditions of the permit are based on the RIPDES regulations as well as 40 CFR Parts 122 through 125 and consist primarily of management requirements common to all permits.

#### Permit Limitation Summary

##### Outfall 001A

Effluent Characteristic	Average Monthly Permit Limit	Maximum Daily Permit Limit	Sampling Frequency
Flow	--- MGD	--- MGD	1/Quarter
TSS	25 mg/L	45 mg/L	1/Quarter
pH	(6.0 S.U.)	(9.0 S.U.)	1/Quarter
Total Zinc	29.7 ug/L	29.7 ug/L	1/Quarter
Total Iron	0.800 mg/L	--- mg/L	1/Quarter
Enterococci	--- CFU/100 ml	--- CFU/100 ml	1/Quarter
Nitrate + Nitrite	--- mg/L	--- mg/L	1/Quarter
Perchlorate	--- mg/L	--- mg/L	1/Quarter

( ) Values in parentheses represent the minimum and maximum values.

--- Signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

<sup>3</sup> Data collected at a location that is unimpacted by significant point source discharges.

<sup>4</sup> Discharge data refers to the maximum of the permit limit or the historic discharge level. The historic discharge level is determined by calculating the upper 95<sup>th</sup> confidence interval for the monthly average reported data for the past five (5) years. For specific cases, changes in treatment efficiency or pretreatment limitations may support the use of an alternative period of time.

**Outfall 002A**

Effluent Characteristic	Average Monthly Permit Limit	Maximum Daily Permit Limit	Sampling Frequency
Flow	--- MGD	--- MGD	1/Quarter
TSS	--- mg/L	--- mg/L	1/Quarter
pH	(6.0 S.U.)	(9.0 S.U.)	1/Quarter
Total Zinc	--- ug/L	--- ug/L	1/Quarter
Enterococci	--- CFU/100 ml	--- CFU/100 ml	1/Quarter
Nitrate + Nitrite	--- mg/L	--- mg/L	1/Quarter
Perchlorate	--- mg/L	--- mg/L	1/Quarter

() Values in parentheses represent the minimum and maximum values.

--- Signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

**V. Comment Period, Hearing Requests, and Procedures for Final Decisions**

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the Rhode Island Department of Environmental Management, Office of Water Resources, 235 Promenade Street, Providence, Rhode Island, 02908-5767. In accordance with Chapter 46-17.4 of Rhode Island General Laws, a public hearing will be held prior to the close of the public comment period. In reaching a final decision on the draft permit the Director will respond to all significant comments and make these responses available to the public at DEM's Providence office.

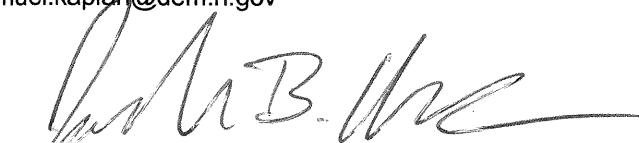
Following the close of the comment period, and after a public hearing, the Director will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments, provided oral testimony, or requested notice. Within thirty (30) days following the notice of the final permit decision any interested person may submit a request for a formal hearing to reconsider or contest the final decision. Requests for formal hearings must satisfy the requirements of 250-RICR-150-10-1.50 of the Regulations for the Rhode Island Pollutant Discharge Elimination System.

**VI. DEM Contact**

Additional information concerning the permit may be obtained between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday, excluding holidays from:

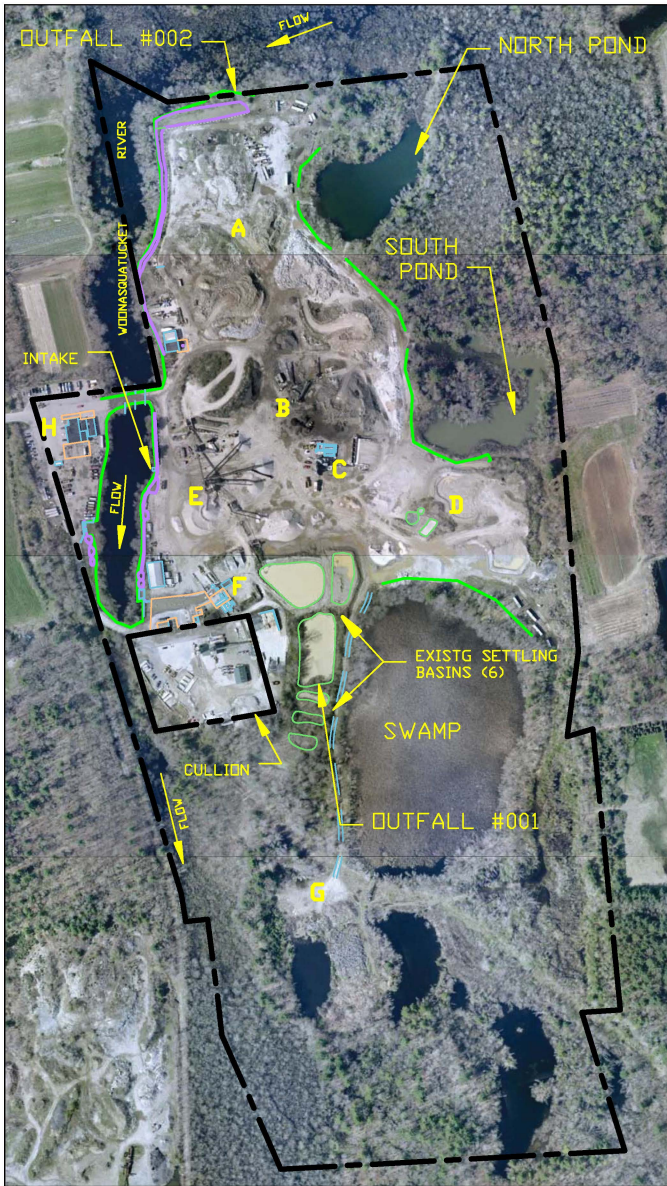
Samuel Kaplan, P.E., Environmental Engineer II  
Department of Environmental Management/ Office of Water Resources  
235 Promenade Street  
Providence, Rhode Island 02908  
Telephone: (401) 222-4700, ext: 2777046  
Email: samuel.kaplan@dem.ri.gov

9/20/2021  
Date

  
Joseph B. Haberek, P.E.  
Environmental Engineer IV  
RIPDES Program  
Office of Water Resources  
Department of Environmental Management



**Attachment A1 – Facility Site Plan**

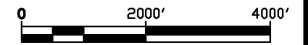


GPS COORDINATES (DEG):

LOCATION	LATITUDE	LONGITUDE
OUTFALL #001	41°56'49"	-71°33'11"
OUTFALL #002	41°57'7"	-71°33'14"
INTAKE	41°56'53"	-71°33'18"

KEY:

A	- MATERIAL STORAGE & PROCESSING
B	- PORTABLE CRUSHER
C	- ASPHALT PLANT
D	- TRUCK WASHOUT
E	- STONE WASHING
F	- CONCRETE PLANT
G	- BRUSH DISPOSAL
H	- OFFICE & EQUIPMENT YARD
—	BERMS
—	DRAINAGE DITCH/BASINS
—	PROPERTY LINE
—	PAVED AREA
—	STRUCTURE (EX)



NOTES:

1. AERIAL PHOTOGRAPHY APRIL 2019, RIGIS.

REV	DESCRIPTION	BY	DATE
STATUS:	AGENCY REVIEW SUBMISSION		

**FERRARI ENGINEERING**  
567 SOUTH COUNTY TRAIL, EXETER, RI (401) 977-6956

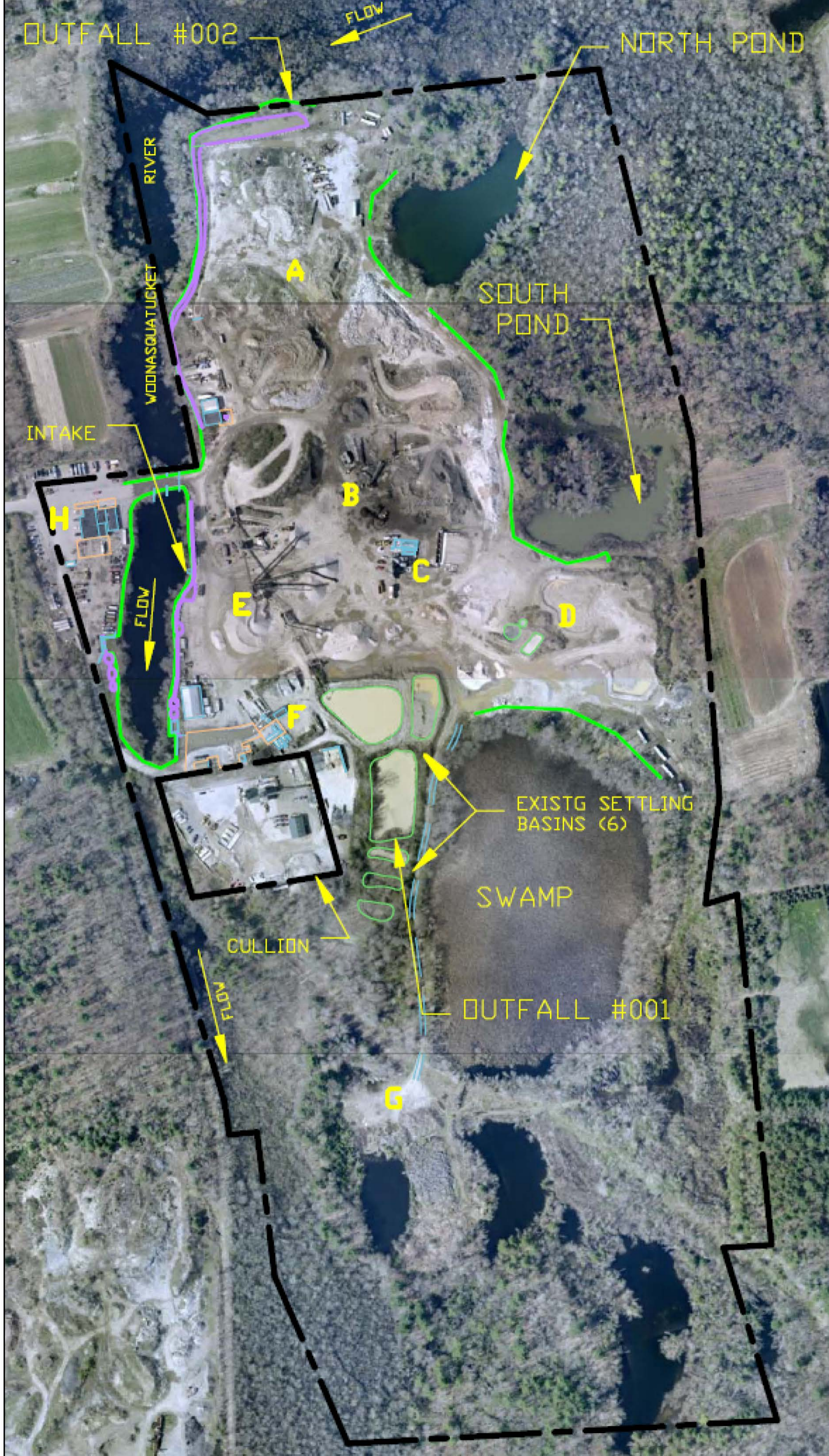
CLIENT: **MATERIAL SAND & STONE CORP**  
618 GREENVILLE ROAD, NORTH SMITHFIELD, RI

SITE: **MATERIAL SAND & STONE**

TITLE: **RIPDES APPLICATION  
OVERALL SITE PLAN**

SCALE:	DATE:	DRAWN:	CHECKED:	REV:
1" = 2000'	5/21/2020	AS	RF	B
PROJECT NO:	DRAWING NO:	REV:	SHEET:	
19108	C101		3 OF 8	

**Attachment A2 – Facility Site Plan Detail**



OUTFALL #002

FLOW

NORTH POND

RIVER

WOONASQUATUCKET

A

SOUTH POND

INTAKE

B

C

E

D

FLOW

H

F

EXISTG SETTLING BASINS (6)

SWAMP

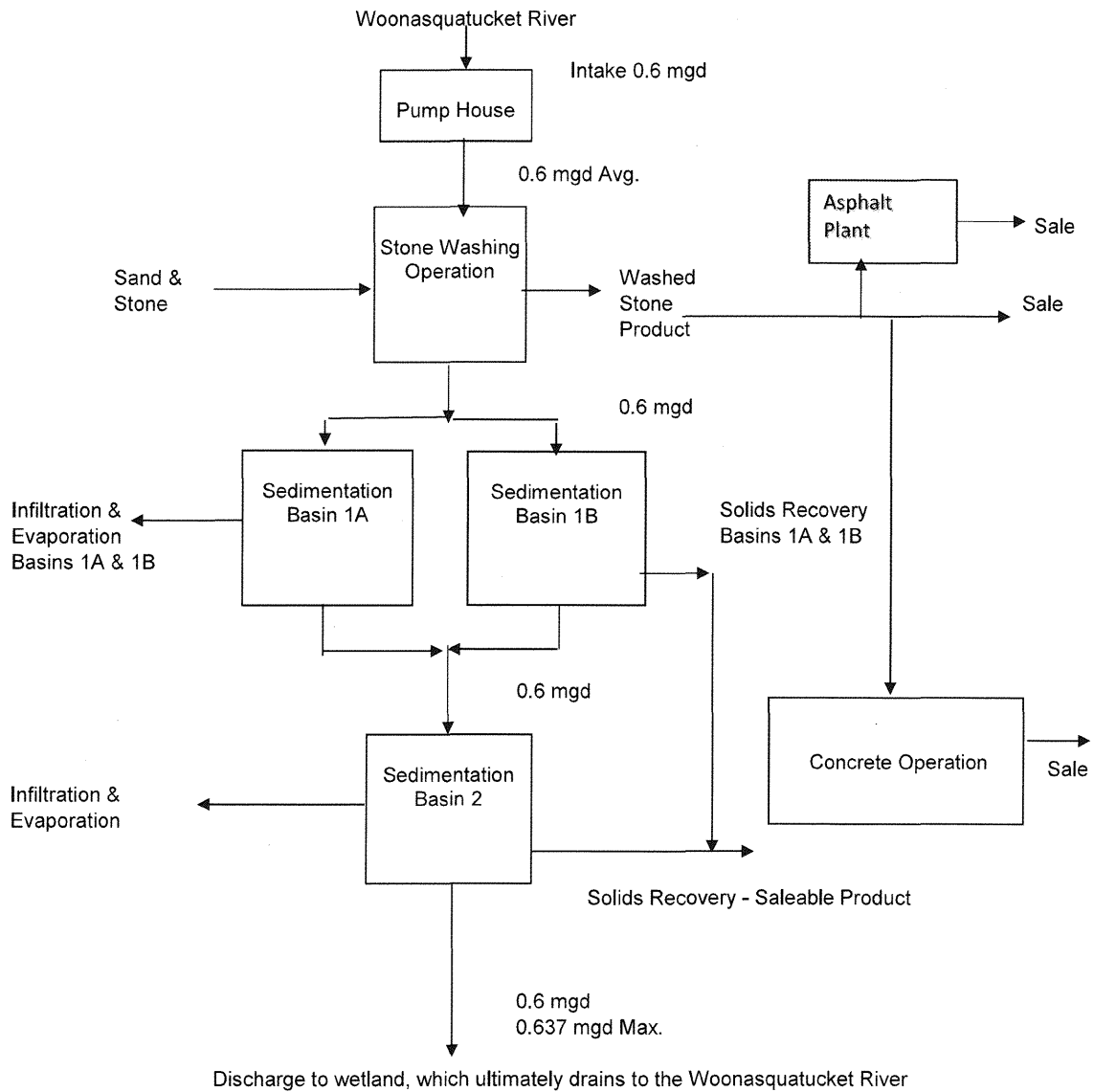
CULLION

OUTFALL #001

FLOW

G

**Attachment B – Facility Water Flow Drawing**



NOTE: A 1-year rain event would yield 37,000 gallons of additional water in a 24-hour period. This would occur over the surface area of the Sedimentation basins, resulting in a maximum daily discharge flow of 0.637 mgd.

**Schematic of Water Flow  
Material Sand & Stone Corporation  
North Smithfield, RI  
Providence County**

**RIPDES Permit Application Form 2C**

**May 28, 2020**

## Attachment C – Water Quality Calculations

**CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS  
FACILITY SPECIFIC DATA INPUT SHEET**

NOTE: LIMITS BASED ON RI WATER QUALITY CRITERIA DATED JULY 2006

FACILITY NAME: **Material Sand and Stone**  
RIPDES PERMIT #: **RI0024007**

	DISSOLVED BACKGROUND DATA (ug/L)	ACUTE METAL TRANSLATOR	CHRONIC METAL TRANSLATOR
ALUMINUM	2.801	NA	NA
ARSENIC	NA	1	1
CADMIUM	0	1.007731051	0.972731051
CHROMIUM III	NA	0.316	0.86
CHROMIUM VI	NA	0.982	0.962
COPPER	0.493	0.96	0.96
LEAD	0.0248	1.012958734	1.012958734
MERCURY	NA	0.85	0.85
NICKEL	NA	0.998	0.997
SELENIUM	NA	NA	NA
SILVER	NA	0.85	NA
ZINC	0.515	0.978	0.986
AMMONIA (as N)	0.053	mg/L	

FLOW DATA	
DESIGN FLOW =	0.637 MGD
=	0.986 CFS
7Q10 FLOW =	0.000 CFS
7Q10 (JUNE-OCT) =	0.000 CFS
7Q10 (NOV-MAY) =	0.000 CFS
30Q5 FLOW =	0.000 CFS
HARMONIC FLOW =	0.000 CFS

DILUTION FACTORS	
ACUTE =	1.000
CHRONIC =	1.000
(MAY-OCT) =	1.000
(NOV-APR) =	1.000
30Q5 FLOW =	1.000
HARMONIC FLOW =	1.000

USE NA WHEN NO DATA IS AVAILABLE

NOTE 1: METAL TRANSLATORS FROM RI WATER QUALITY REGS.

pH =	7.4 S.U.
HARDNESS =	21.8 (mg/L as CaCO3)



WATER QUALITY BASED EFFLUENT LIMITS - FRESHWATER

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Material Sand and Stone

RIPDES PERMIT #: RI0024007

Month	Upper 90 <sup>th</sup> % pH	Acute Criteria* mg/L as N	Chronic Criteria* mg/L as N
May	7.4	15.4	2.57
Jun	7.4	15.4	2.57
Jul	7.4	15.4	2.57
Aug	7.4	15.4	2.57
Sep	7.4	15.4	2.57
Oct	7.4	15.4	2.57
Nov	7.4	15.4	2.57
Dec	7.4	15.4	2.57
Jan	7.4	15.4	2.57
Feb	7.4	15.4	2.57
Mar	7.4	15.4	2.57
Apr	7.4	15.4	2.57

*\*NOTE: Criteria from Appendix B of the RI Water Quality Regs., July 2006.*

## CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Material Sand and Stone RIPDES PERMIT #: RI0024007

NOTE: METALS CRITERIA ARE EXPRESSED AS DISSOLVED, METALS LIMITS ARE EXPRESSED AS TOTAL

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	FRESHWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	FRESHWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
<b>PRIORITY POLLUTANTS:</b>							
<b>TOXIC METALS AND CYANIDE</b>							
ANTIMONY	7440360		450	360	10	640	8
ARSENIC (limits are total recoverable)	7440382	NA	340	272	150	1.4	1.12
ASBESTOS	1332214			No Criteria			No Criteria
BERYLLIUM	7440417		7.5	6	0.17		0.136
CADMIUM (limits are total recoverable)	7440439	0	0.456928203	0.408080492	0.08515684		0.078789667
CHROMIUM III (limits are total recoverable)	16065831	NA	163.6403775	414.2794367	21.28625109		19.8011638
CHROMIUM VI (limits are total recoverable)	18540299	NA	16	13.03462322	11		9.147609148
COPPER (limits are total recoverable)	7440508	0.493	3.199368924	2.999408366	2.436761917		2.284464297
CYANIDE	57125		22	17.6	5.2	140	4.16
LEAD (limits are total recoverable)	7439921	0.0248	11.89534182	10.56884874	0.463544393		0.411852862
MERCURY (limits are total recoverable)	7439976	NA	1.4	1.317647059	0.77	0.15	0.141176471
NICKEL (limits are total recoverable)	7440020	NA	129.0621191	103.4566085	14.33481689	4600	11.50236059
SELENIUM (limits are total recoverable)	7782492	NA	20	16	5	4200	4
SILVER (limits are total recoverable)	7440224	NA	0.251167864	0.236393284	NA		No Criteria
THALLIUM	7440280		46	36.8	1	0.47	0.376
ZINC (limits are total recoverable)	7440666	0.515	32.23512538	29.66422581	32.49880739	26000	29.66422581
<b>VOLATILE ORGANIC COMPOUNDS</b>							
ACROLEIN	107028		2.9	2.32	0.06	290	0.048
ACRYLONITRILE	107131		378	302.4	8.4	2.5	2
BENZENE	71432		265	212	5.9	510	4.72
BROMOFORM	75252		1465	1172	33	1400	26.4
CARBON TETRACHLORIDE	56235		1365	1092	30	16	12.8
CHLOROBENZENE	108907		795	636	18	1600	14.4
CHLORODIBROMOMETHANE	124481			No Criteria		130	104
CHLOROFORM	67663		1445	1156	32	4700	25.6
DICHLOROBROMOMETHANE	75274			No Criteria		170	136
1,2DICHLOROETHANE	107062		5900	4720	131	370	104.8
1,1DICHLOROETHYLENE	75354		580	464	13	7100	10.4
1,2DICHLOROPROPANE	78875		2625	2100	58	150	46.4
1,3DICHLOROPROPYLENE	542756			No Criteria		21	16.8
ETHYLBENZENE	100414		1600	1280	36	2100	28.8
BROMOMETHANE (methyl bromide)	74839			No Criteria		1500	1200
CHLOROMETHANE (methyl chloride)	74873			No Criteria			No Criteria
METHYLENE CHLORIDE	75092		9650	7720	214	5900	171.2

## CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Material Sand and Stone RIPDES PERMIT #: RI0024007

NOTE: METALS CRITERIA ARE EXPRESSED AS DISSOLVED, METALS LIMITS ARE EXPRESSED AS TOTAL

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	FRESHWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	FRESHWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
1,1,2,2TETRACHLOROETHANE	79345		466	372.8	10	40	8
TETRACHLOROETHYLENE	127184		240	192	5.3	33	4.24
TOLUENE	108883		635	508	14	15000	11.2
1,2TRANS-DICHLOROETHYLENE	156605			No Criteria		10000	8000
1,1,1TRICHLOROETHANE	71556			No Criteria			No Criteria
1,1,2TRICHLOROETHANE	79005		900	720	20	160	16
TRICHLOROETHYLENE	79016		1950	1560	43	300	34.4
VINYL CHLORIDE	75014			No Criteria		2.4	1.92
ACID ORGANIC COMPOUNDS							
2CHLOROPHENOL	95578		129	103.2	2.9	150	2.32
2,4DICHLOROPHENOL	120832		101	80.8	2.2	290	1.76
2,4DIMETHYLPHENOL	105679		106	84.8	2.4	850	1.92
4,6DINITRO-2-METHYL PHENOL	534521			No Criteria		280	224
2,4DINITROPHENOL	51285		31	24.8	0.69	5300	0.552
4-NITROPHENOL	88755			No Criteria			No Criteria
PENTACHLOROPHENOL	87865		0.05702154	0.045617232	0.043747265	30	0.034997812
PHENOL	108952		251	200.8	5.6	1700000	4.48
2,4,6-TRICHLOROPHENOL	88062		16	12.8	0.36	24	0.288
BASE NEUTRAL COMPOUNDS							
ACENAPHTHENE	83329		85	68	1.9	990	1.52
ANTHRACENE	120127			No Criteria		40000	32000
BENZIDINE	92875			No Criteria		0.002	0.0016
POLYCYCLIC AROMATIC HYDROCARBONS				No Criteria		0.18	0.144
BIS(2-CHLOROETHYL)ETHER	111444			No Criteria		5.3	4.24
BIS(2-CHLOROISOPROPYL)ETHER	108601			No Criteria		65000	52000
BIS(2-ETHYLHEXYL)PHTHALATE	117817		555	444	12	22	9.6
BUTYL BENZYL PHTHALATE	85687		85	68	1.9	1900	1.52
2-CHLORONAPHTHALENE	91587			No Criteria		1600	1280
1,2-DICHLOROBENZENE	95501		79	63.2	1.8	1300	1.44
1,3-DICHLOROBENZENE	541731		390	312	8.7	960	6.96
1,4-DICHLOROBENZENE	106467		56	44.8	1.2	190	0.96
3,3-DICHLOROBENZIDENE	91941			No Criteria		0.28	0.224
DIETHYL PHTHALATE	84662		2605	2084	58	44000	46.4
DIMETHYL PHTHALATE	131113		1650	1320	37	1100000	29.6
DI-n-BUTYL PHTHALATE	84742			No Criteria		4500	3600
2,4-DINITROTOLUENE	121142		1550	1240	34	34	27.2

## CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Material Sand and Stone RIPDES PERMIT #: RI0024007

NOTE: METALS CRITERIA ARE EXPRESSED AS DISSOLVED, METALS LIMITS ARE EXPRESSED AS TOTAL

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	FRESHWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	FRESHWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
1,2DIPHENYLHYDRAZINE	122667		14	11.2	0.31	2	0.248
FLUORANTHENE	206440		199	159.2	4.4	140	3.52
FLUORENE	86737			No Criteria		5300	4240
HEXACHLORO BENZENE	118741			No Criteria		0.0029	0.00232
HEXACHLORO BUTADIENE	87683			No Criteria		180	144
HEXACHLORO CYCLOPENTADIENE	77474		0.35	0.28	0.008	1100	0.0064
HEXACHLORO ETHANE	67721		49	39.2	1.1	33	0.88
ISOPHORONE	78591		5850	4680	130	9600	104
NAPHTHALENE	91203		115	92	2.6		2.08
NITROBENZENE	98953		1350	1080	30	690	24
N-NITROSODIMETHYLAMINE	62759			No Criteria		30	24
N-NITROSODI-N-PROPYLAMINE	621647			No Criteria		5.1	4.08
N-NITROSODIPHENYLAMINE	86306		293	234.4	6.5	60	5.2
PYRENE	129000			No Criteria		4000	3200
1,2,4trichlorobenzene	120821		75	60	1.7	70	1.36
PESTICIDES/PCBs							
ALDRIN	309002		3	2.4		0.0005	0.0004
Alpha BHC	319846			No Criteria		0.049	0.0392
Beta BHC	319857			No Criteria		0.17	0.136
Gamma BHC (Lindane)	58899		0.95	0.76		1.8	1.44
CHLORDANE	57749		2.4	1.92	0.0043	0.0081	0.00344
4,4DDT	50293		1.1	0.88	0.001	0.0022	0.0008
4,4DDE	72559			No Criteria		0.0022	0.00176
4,4DDD	72548			No Criteria		0.0031	0.00248
DIELDRIN	60571		0.24	0.192	0.056	0.00054	0.000432
ENDOSULFAN (alpha)	959988		0.22	0.176	0.056	89	0.0448
ENDOSULFAN (beta)	33213659		0.22	0.176	0.056	89	0.0448
ENDOSULFAN (sulfate)	1031078			No Criteria		89	71.2
ENDRIN	72208		0.086	0.0688	0.036	0.06	0.0288
ENDRIN ALDEHYDE	7421934			No Criteria		0.3	0.24
HEPTACHLOR	76448		0.52	0.416	0.0038	0.00079	0.000632
HEPTACHLOR EPOXIDE	1024573		0.52	0.416	0.0038	0.00039	0.000312
POLYCHLORINATED BIPHENYLS3	1336363			No Criteria	0.014	0.00064	0.000512
2,3,7,8TCDD (Dioxin)	1746016			No Criteria		0.000000051	4.08E-08
TOXAPHENE	8001352		0.73	0.584	0.0002	0.0028	0.00016
TRIBUTYL TIN			0.46	0.368	0.072		0.0576

**CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS**

FACILITY NAME: Material Sand and Stone RIPDES PERMIT #: RI0024007

NOTE: METALS CRITERIA ARE EXPRESSED AS DISSOLVED, METALS LIMITS ARE EXPRESSED AS TOTAL

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	FRESHWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	FRESHWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
<b>NON PRIORITY POLLUTANTS:</b>							
<b>OTHER SUBSTANCES</b>							
ALUMINUM (limits are total recoverable)	7429905	2.801	750	675	87		78.3
AMMONIA as N(winter/summer)	7664417		15.4   15.4	13860   13860	2.57   2.57		2313   2313
4BROMOPHENYL PHENYL ETHER			18	14.4	0.4		0.32
CHLORIDE	16887006		860000	688000	230000		184000
CHLORINE	7782505		19	19	11		11
4CHLORO2METHYLPHENOL			15	12	0.32		0.256
1CHLORONAPHTHALENE			80	64	1.8		1.44
4CHLOROPHENOL	106489		192	153.6	4.3		3.44
2,4DICHLORO6METHYLPHENOL			22	17.6	0.48		0.384
1,1DICHLOROPROPANE			1150	920	26		20.8
1,3DICHLOROPROPANE	142289		303	242.4	6.7		5.36
2,3DINITROTOLUENE			17	13.6	0.37		0.296
2,4DINITRO6METHYL PHENOL			12	9.6	0.26		0.208
IRON	7439896			No Criteria	1000		800
pentachlorobenzene	608935		13	10.4	0.28		0.224
PENTACHLOROETHANE			362	289.6	8		6.4
1,2,3,5tetrachlorobenzene			321	256.8	7.1		5.68
1,1,1,2TETRACHLOROETHANE	630206		980	784	22		17.6
2,3,4,6TETRACHLOROPHENOL	58902		7	5.6	0.16		0.128
2,3,5,6TETRACHLOROPHENOL			8.5	6.8	0.19		0.152
2,4,5TRICHLOROPHENOL	95954		23	18.4	0.51		0.408
2,4,6TRINITROPHENOL	88062		4235	3388	94		75.2
XYLENE	1330207		133	106.4	3		2.4

**CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS**  
**FACILITY NAME: Material Sand and Stone** **RIPDES PERMIT #: RI0024007**

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
<b>PRIORITY POLLUTANTS:</b>			
<b>TOXIC METALS AND CYANIDE</b>			
ANTIMONY	7440360	360.00	8.00
ARSENIC, TOTAL	7440382	272.00	1.12
ASBESTOS	1332214	No Criteria	0.00000
BERYLLIUM	7440417	6.00	0.14
CADMIUM, TOTAL	7440439	0.41	0.07879
CHROMIUM III, TOTAL	16065831	414.28	19.80
CHROMIUM VI, TOTAL	18540299	13.03	9.15
COPPER, TOTAL	7440508	3.00	2.28
CYANIDE	57125	17.60	4.16
LEAD, TOTAL	7439921	10.57	0.41
MERCURY, TOTAL	7439976	1.32	0.14
NICKEL, TOTAL	7440020	103.46	11.50
SELENIUM, TOTAL	7782492	16.00	4.00
SILVER, TOTAL	7440224	0.24	No Criteria
THALLIUM	7440280	36.80	0.38
ZINC, TOTAL	7440666	29.66	29.66
<b>VOLATILE ORGANIC COMPOUNDS</b>			
ACROLEIN	107028	2.32	0.04800
ACRYLONITRILE	107131	302.40	2.00
BENZENE	71432	212.00	4.72
BROMOFORM	75252	1172.00	26.40
CARBON TETRACHLORIDE	56235	1092.00	12.80
CHLOROBENZENE	108907	636.00	14.40
CHLORODIBROMOMETHANE	124481	No Criteria	104.00
CHLOROFORM	67663	1156.00	25.60
DICHLOROBROMOMETHANE	75274	No Criteria	136.00
1,2DICHLOROETHANE	107062	4720.00	104.80
1,1DICHLOROETHYLENE	75354	464.00	10.40
1,2DICHLOROPROPANE	78875	2100.00	46.40
1,3DICHLOROPROPYLENE	542756	No Criteria	16.80
ETHYLBENZENE	100414	1280.00	28.80
BROMOMETHANE (methyl bromide)	74839	No Criteria	1200.00
CHLOROMETHANE (methyl chloride)	74873	No Criteria	0.00000
METHYLENE CHLORIDE	75092	7720.00	171.20
1,1,2,2TETRACHLOROETHANE	79345	372.80	8.00

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
TETRACHLOROETHYLENE	127184	192.00	4.24
TOLUENE	108883	508.00	11.20
1,2TRANS-DICHLOROETHYLENE	156605	No Criteria	8000.00
1,1,1TRICHLOROETHANE	71556	No Criteria	0.00000
1,1,2TRICHLOROETHANE	79005	720.00	16.00
TRICHLOROETHYLENE	79016	1560.00	34.40
VINYL CHLORIDE	75014	No Criteria	1.92
<b>ACID ORGANIC COMPOUNDS</b>			
2CHLOROPHENOL	95578	103.20	2.32
2,4DICHLOROPHENOL	120832	80.80	1.76
2,4DIMETHYLPHENOL	105679	84.80	1.92
4,6DINITRO-2METHYL PHENOL	534521	No Criteria	224.00
2,4DINITROPHENOL	51285	24.80	0.55
4NITROPHENOL	88755	No Criteria	0.00000
PENTACHLOROPHENOL	87865	0.05	0.03500
PHENOL	108952	200.80	4.48
2,4,6TRICHLOROPHENOL	88062	12.80	0.29
<b>BASE NEUTRAL COMPOUNDS</b>			
ACENAPHTHENE	83329	68.00	1.52
ANTHRACENE	120127	No Criteria	32000.00
BENZIDINE	92875	No Criteria	0.00160
PAHs		No Criteria	0.14
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	4.24
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	52000.00
BIS(2ETHYLHEXYL)PHTHALATE	117817	444.00	9.60
BUTYL BENZYL PHTHALATE	85687	68.00	1.52
2CHLORONAPHTHALENE	91587	No Criteria	1280.00
1,2DICHLOROBENZENE	95501	63.20	1.44
1,3DICHLOROBENZENE	541731	312.00	6.96
1,4DICHLOROBENZENE	106467	44.80	0.96
3,3DICHLOROBENZIDENE	91941	No Criteria	0.22
DIETHYL PHTHALATE	84662	2084.00	46.40
DIMETHYL PHTHALATE	131113	1320.00	29.60
DI-n-BUTYL PHTHALATE	84742	No Criteria	3600.00
2,4DINITROTOLUENE	121142	1240.00	27.20
1,2DIPHENYLHYDRAZINE	122667	11.20	0.25
FLUORANTHENE	206440	159.20	3.52

**CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS**  
**FACILITY NAME: Material Sand and Stone** **RIPDES PERMIT #: RI0024007**

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
FLUORENE	86737	No Criteria	4240.00
HEXACHLOROBENZENE	118741	No Criteria	0.00232
HEXACHLOROBUTADIENE	87683	No Criteria	144.00
HEXACHLOROCYCLOPENTADIENE	77474	0.28	0.00640
HEXACHLOROETHANE	67721	39.20	0.88
ISOPHORONE	78591	4680.00	104.00
NAPHTHALENE	91203	92.00	2.08
NITROBENZENE	98953	1080.00	24.00
N-NITROSODIMETHYLAMINE	62759	No Criteria	24.00
N-NITROSODI-N-PROPYLAMINE	621647	No Criteria	4.08
N-NITROSODIPHENYLAMINE	86306	234.40	5.20
PYRENE	129000	No Criteria	3200.00
1,2,4trichlorobenzene	120821	60.00	1.36
<b>PESTICIDES/PCBs</b>			
ALDRIN	309002	2.40	0.00040
Alpha BHC	319846	No Criteria	0.04
Beta BHC	319857	No Criteria	0.14
Gamma BHC (Lindane)	58899	0.76	0.76
CHLORDANE	57749	1.92	0.00344
4,4DDT	50293	0.88	0.00080
4,4DDE	72559	No Criteria	0.00176
4,4DDD	72548	No Criteria	0.00248
DIELDRIN	60571	0.19	0.00043
ENDOSULFAN (alpha)	959988	0.18	0.04480
ENDOSULFAN (beta)	33213659	0.18	0.04480
ENDOSULFAN (sulfate)	1031078	No Criteria	71.20
ENDRIN	72208	0.07	0.03
ENDRIN ALDEHYDE	7421934	No Criteria	0.24
HEPTACHLOR	76448	0.42	0.00
HEPTACHLOR EPOXIDE	1024573	0.42	0.00
POLYCHLORINATED BIPHENYLS3	1336363	No Criteria	0.00
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.00
TOXAPHENE	8001352	0.58	0.00
TRIBUTYLTIN		0.37	0.06

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
<b>NON PRIORITY POLLUTANTS:</b>			
<b>OTHER SUBSTANCES</b>			
ALUMINUM, TOTAL	7429905	675.00	78.30
AMMONIA (as N), WINTER (NOV-APR)	7664417	13860.00	2313.00
AMMONIA (as N), SUMMER (MAY-OCT)	7664417	13860.00	2313.00
4BROMOPHENYL PHENYL ETHER		14.40	0.32
CHLORIDE	16887006	688000.00	184000.00
CHLORINE	7782505	19.00	11.00
4CHLORO2METHYLPHENOL		12.00	0.26
1CHLORONAPHTHALENE		64.00	1.44
4CHLOROPHENOL	106489	153.60	3.44
2,4DICHLORO6METHYLPHENOL		17.60	0.38
1,1DICHLOROPROPANE		920.00	20.80
1,3DICHLOROPROPANE	142289	242.40	5.36
2,3DINITROTOLUENE		13.60	0.30
2,4DINITRO6METHYL PHENOL		9.60	0.21
IRON	7439896	No Criteria	800.00
pentachlorobenzene	608935	10.40	0.22
PENTACHLOROETHANE		289.60	6.40
1,2,3,5tetrachlorobenzene		256.80	5.68
1,1,1,2TETRACHLOROETHANE	630206	784.00	17.60
2,3,4,6TETRACHLOROPHENOL	58902	5.60	0.13
2,3,5,6TETRACHLOROPHENOL		6.80	0.15
2,4,5TRICHLOROPHENOL	95954	18.40	0.41
2,4,6TRINITROPHENOL	88062	3388.00	75.20
XYLENE	1330207	106.40	2.40

**Facility Name: *Material Sand and Stone***  
**RIPDES Permit #: *RI0024007***  
**Outfall #: *001***

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L)		Antideg. Limits (ug/L) Monthly Ave	Application Data (ug/L)		Ave. DMR Data (ug/L)		Potential Permit Limits (ug/L)		Reasonable Potential?	Reasonable Potential?
		Based on WQ Criteria			Max	Ave	NA		Daily Max	Monthly Ave	Daily	Monthly
		Daily Max	Monthly Ave				Max	Ave			Max	Ave
<b>PRIORITY POLLUTANTS</b>												
<b>TOXIC METALS AND CYANIDE</b>												
ANTIMONY	7440360	360.00	8.00	---	---	---	---	---	360	8		
ARSENIC (limits are total recoverable)	7440382	272.00	1.12	---	---	---	---	---	272	1.12		
ASBESTOS	1332214	No Criteria	0.00	---	---	---	---	---	---	0		
BERYLLIUM	7440417	6.00	0.14	---	---	---	---	---	6	0.136		
CADMIUM (limits are total recoverable)	7440439	0.41	0.08	---	---	---	---	---	0.408080492	0.078789667		
CHROMIUM III (limits are total recoverable)	16065831	414.28	19.80	---	---	---	---	---	414.2794367	19.8011638		
CHROMIUM VI (limits are total recoverable)	18540299	13.03	9.15	---	---	---	---	---	13.03462322	9.147609148		
COPPER (limits are total recoverable)	7440508	3.00	2.28	---	---	---	---	---	2.999408366	2.284464297		
CYANIDE	57125	17.60	4.16	---	---	---	---	---	17.6	4.16		
LEAD (limits are total recoverable)	7439921	10.57	0.41	---	---	---	---	---	10.56884874	0.411852862		
MERCURY (limits are total recoverable)	7439976	1.32	0.14	---	---	---	---	---	1.317647059	0.141176471		
NICKEL (limits are total recoverable)	7440020	103.46	11.50	---	---	---	---	---	103.4566085	11.50236059		
SELENIUM (limits are total recoverable)	7782492	16.00	4.00	---	---	---	---	---	16	4		
SILVER (limits are total recoverable)	7440224	0.24	No Criteria	---	---	---	---	---	0.236393284	0.236393284		
THALLIUM	7440280	36.80	0.38	---	---	---	---	---	36.8	0.376		
ZINC (limits are total recoverable)	7440666	29.66	29.66	---	---	30	---	---	29.66422581	29.66422581	Y	Y
<b>VOLATILE ORGANIC COMPOUNDS</b>												
ACROLEIN	107028	2.32	0.05	---	---	---	---	---	2.32	0.048		
ACRYLONITRILE	107131	302.40	2.00	---	---	---	---	---	302.4	2		
BENZENE	71432	212.00	4.72	---	---	---	---	---	212	4.72		
BROMOFORM	75252	1172.00	26.40	---	---	---	---	---	1172	26.4		



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CARBON TETRACHLORIDE	56235	1092.00	12.80	---	---	---	---	1092	12.8		
CHLOROBENZENE	108907	636.00	14.40	---	---	---	---	636	14.4		
CHLORODIBROMOMETHANE	124481	No Criteria	104.00	---	---	---	---	---	104		
CHLOROFORM	67663	1156.00	25.60	---	---	---	---	1156	25.6		
DICHLOROBROMOMETHANE	75274	No Criteria	136.00	---	---	---	---	---	136		
1,2DICHLOROETHANE	107062	4720.00	104.80	---	---	---	---	4720	104.8		
1,1DICHLOROETHYLENE	75354	464.00	10.40	---	---	---	---	464	10.4		
1,2DICHLOROPROPANE	78875	2100.00	46.40	---	---	---	---	2100	46.4		
1,3DICHLOROPROPYLENE	542756	No Criteria	16.80	---	---	---	---	---	16.8		
ETHYLBENZENE	100414	1280.00	28.80	---	---	---	---	1280	28.8		
BROMOMETHANE (methyl bromide)	74839	No Criteria	1200.00	---	---	---	---	---	1200		
CHLOROMETHANE (methyl chloride)	74873	No Criteria	0.00	---	---	---	---	---	0		
METHYLENE CHLORIDE	75092	7720.00	171.20	---	---	---	---	7720	171.2		
1,1,2,2TETRACHLOROETHANE	79345	372.80	8.00	---	---	---	---	372.8	8		
TETRACHLOROETHYLENE	127184	192.00	4.24	---	---	---	---	192	4.24		
TOLUENE	108883	508.00	11.20	---	---	---	---	508	11.2		
1,2TRANSDICHLOROETHYLENE	156605	No Criteria	8000.00	---	---	---	---	---	8000		
1,1,1TRICHLOROETHANE	71556	No Criteria	0.00	---	---	---	---	---	0		
1,1,2TRICHLOROETHANE	79005	720.00	16.00	---	---	---	---	720	16		
TRICHLOROETHYLENE	79016	1560.00	34.40	---	---	---	---	1560	34.4		
VINYL CHLORIDE	75014	No Criteria	1.92	---	---	---	---	---	1.92		
ACID ORGANIC COMPOUNDS											
2CHLOROPHENOL	95578	103.20	2.32	---	---	---	---	103.2	2.32		
2,4DICHLOROPHENOL	120832	80.80	1.76	---	---	---	---	80.8	1.76		
2,4DIMETHYLPHENOL	105679	84.80	1.92	---	---	---	---	84.8	1.92		
4,6DINITRO2METHYL PHENOL	534521	No Criteria	224.00	---	---	---	---	---	224		
2,4DINITROPHENOL	51285	24.80	0.55	---	---	---	---	24.8	0.552		
4NITROPHENOL	88755	No Criteria	0.00	---	---	---	---	---	0		
PENTACHLOROPHENOL	87865	0.05	0.03	---	---	---	---	0.045617232	0.034997812		
PHENOL	108952	200.80	4.48	---	---	---	---	200.8	4.48		
2,4,6TRICHLOROPHENOL	88062	12.80	0.29	---	---	---	---	12.8	0.288		
BASE NEUTRAL COMPOUNDS											
ACENAPHTHENE	83329	68.00	1.52	---	---	---	---	68	1.52		
ANTHRACENE	120127	No Criteria	32000.00	---	---	---	---	---	32000		
BENZIDINE	92875	No Criteria	0.00	---	---	---	---	---	0.0016		
POLYCYCLIC AROMATIC HYDROCARBONS		No Criteria	0.14	---	---	---	---	---	0.144		
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	4.24	---	---	---	---	---	4.24		
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	52000.00	---	---	---	---	---	52000		
BIS(2ETHYLHEXYL)PHTHALATE	117817	444.00	9.60	---	---	---	---	444	9.6		
BUTYL BENZYL PHTHALATE	85687	68.00	1.52	---	---	---	---	68	1.52		

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2CHLORONAPHTHALENE	91587	No Criteria	1280.00	---	---	---	---	---	1280	
1,2DICHLOROBEZENE	95501	63.20	1.44	---	---	---	---	63.2	1.44	
1,3DICHLOROBEZENE	541731	312.00	6.96	---	---	---	---	312	6.96	
1,4DICHLOROBEZENE	106467	44.80	0.96	---	---	---	---	44.8	0.96	
3,3DICHLOROBEZIDENE	91941	No Criteria	0.22	---	---	---	---	---	0.224	
DIETHYL PHTHALATE	84662	2084.00	46.40	---	---	---	---	2084	46.4	
DIMETHYL PHTHALATE	131113	1320.00	29.60	---	---	---	---	1320	29.6	
DInBUTYL PHTHALATE	84742	No Criteria	3600.00	---	---	---	---	---	3600	
2,4DINITROTOLUENE	121142	1240.00	27.20	---	---	---	---	1240	27.2	
1,2DIPHENYLHYDRAZINE	122667	11.20	0.25	---	---	---	---	11.2	0.248	
FLUORANTHENE	206440	159.20	3.52	---	---	---	---	159.2	3.52	
FLUORENE	86737	No Criteria	4240.00	---	---	---	---	---	4240	
HEXACHLOROBEZENE	118741	No Criteria	0.00	---	---	---	---	---	0.00232	
HEXACHLOROBUTADIENE	87683	No Criteria	144.00	---	---	---	---	---	144	
HEXACHLOROCYCLOPENTADIENE	77474	0.28	0.01	---	---	---	---	0.28	0.0064	
HEXACHLOROETHANE	67721	39.20	0.88	---	---	---	---	39.2	0.88	
ISOPHORONE	78591	4680.00	104.00	---	---	---	---	4680	104	
NAPHTHALENE	91203	92.00	2.08	---	---	---	---	92	2.08	
NITROBEZENE	98953	1080.00	24.00	---	---	---	---	1080	24	
NNITROSODIMETHYLAMINE	62759	No Criteria	24.00	---	---	---	---	---	24	
NNITROSODINPROPYLAMINE	621647	No Criteria	4.08	---	---	---	---	---	4.08	
NNITROSODIPHENYLAMINE	86306	234.40	5.20	---	---	---	---	234.4	5.2	
PYRENE	129000	No Criteria	3200.00	---	---	---	---	---	3200	
1,2,4trichlorobenzene	120821	60.00	1.36	---	---	---	---	60	1.36	
PESTICIDES/PCBs										
ALDRIN	309002	2.40	0.00	---	---	---	---	2.4	0.0004	
Alpha BHC	319846	No Criteria	0.04	---	---	---	---	---	0.0392	
Beta BHC	319857	No Criteria	0.14	---	---	---	---	---	0.136	
Gamma BHC (Lindane)	58899	0.76	0.76	---	---	---	---	0.76	0.76	
CHLORDANE	57749	1.92	0.00	---	---	---	---	1.92	0.00344	
4,4DDT	50293	0.88	0.00	---	---	---	---	0.88	0.0008	
4,4DDE	72559	No Criteria	0.00	---	---	---	---	---	0.00176	
4,4DDD	72548	No Criteria	0.00	---	---	---	---	---	0.00248	
DIELDRIN	60571	0.19	0.00	---	---	---	---	0.192	0.000432	
ENDOSULFAN (alpha)	959988	0.18	0.04	---	---	---	---	0.176	0.0448	
ENDOSULFAN (beta)	33213659	0.18	0.04	---	---	---	---	0.176	0.0448	
ENDOSULFAN (sulfate)	1031078	No Criteria	71.20	---	---	---	---	---	71.2	
ENDRIN	72208	0.07	0.03	---	---	---	---	0.0688	0.0288	
ENDRIN ALDEHYDE	7421934	No Criteria	0.24	---	---	---	---	---	0.24	
HEPTACHLOR	76448	0.42	0.00	---	---	---	---	0.416	0.000632	

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HEPTACHLOR EPOXIDE	1024573	0.42	0.00	---	---	---	---	0.416	0.000312		
POLYCHLORINATED BIPHENYLS3	1336363	No Criteria	0.00	---	---	---	---	---	0.000512		
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.00	---	---	---	---	---	4.08E-08		
TOXAPHENE	8001352	0.58	0.00	---	---	---	---	0.584	0.00016		
TRIBUTYL TIN		0.37	0.06	---	---	---	---	0.368	0.0576		
NON PRIORITY POLLUTANTS:											
OTHER SUBSTANCES											
ALUMINUM (limits are total recoverable)	7429905	675.00	78.30	---	---	---	---	675	78.3		
AMMONIA (winter)	7664417	13860.00	2313.00	---	---	---	---	13860	2313		
AMMONIA (summer)		13860.00	2313.00	---	---	580	---	13860	2313	N	
4BROMOPHENYL PHENYL ETHER	16887006	14.40	0.32	---	---	---	---	14.4	0.32		
CHLORIDE	7782505	688000.00	184000.00	---	---	---	---	688000	184000		
CHLORINE		19.00	11.00	---	---	---	---	19	11		
4CHLORO2METHYLPHENOL		12.00	0.26	---	---	---	---	12	0.256		
1CHLORONAPHTHALENE	106489	64.00	1.44	---	---	---	---	64	1.44		
4CHLOROPHENOL		153.60	3.44	---	---	---	---	153.6	3.44		
2,4DICHLORO6METHYLPHENOL		17.60	0.38	---	---	---	---	17.6	0.384		
1,1DICHLOROPROPANE	142289	920.00	20.80	---	---	---	---	920	20.8		
1,3DICHLOROPROPANE		242.40	5.36	---	---	---	---	242.4	5.36		
2,3DINITROTOLUENE		13.60	0.30	---	---	---	---	13.6	0.296		
2,4DINITRO6METHYL PHENOL	7439896	9.60	0.21	---	---	---	---	9.6	0.208		
IRON	608935	No Criteria	800.00	---	---	1540	---	---	800	Y	
pentachlorobenzene		10.40	0.22	---	---	---	---	10.4	0.224		
PENTACHLOROETHANE		289.60	6.40	---	---	---	---	289.6	6.4		
1,2,3,5tetrachlorobenzene	630206	256.80	5.68	---	---	---	---	256.8	5.68		
1,1,1,2TETRACHLOROETHANE	58902	784.00	17.60	---	---	---	---	784	17.6		
2,3,4,6TETRACHLOROPHENOL		5.60	0.13	---	---	---	---	5.6	0.128		
2,3,5,6TETRACHLOROPHENOL	95954	6.80	0.15	---	---	---	---	6.8	0.152		
2,4,5TRICHLOROPHENOL	88062	18.40	0.41	---	---	---	---	18.4	0.408		
2,4,6TRINITROPHENOL	1330207	3388.00	75.20	---	---	---	---	3388	75.2		
XYLENE		106.40	2.40	---	---	---	---	106.4	2.4		

ANALYTE	SAMPDATE	Result	UNITS	SAMPLENAME	DL	RL	PROJECT			
Parameter	SampleDate	ReportedResult	Result	Unit	Station	DetectionLimit	QuantitationLevel	RiverID	Project	
Aluminum, Dissolved (as AL)	8/5/2014 0:00	0	0	Micrograms per Liter	WON14	0.517	0.517	RI0002007R-10A	Ambient River Monitoring Program	
Aluminum, Dissolved (as AL)	9/9/2014 0:00	0	0	Micrograms per Liter	WON14	0.517	0.517	RI0002007R-10A	Ambient River Monitoring Program	
Aluminum, Dissolved (as AL)	9/9/2014 0:00	0.902	0.902	Micrograms per Liter	WON01	0.517	0.517	RI0002007R-10A	Ambient River Monitoring Program	
Aluminum, Dissolved (as AL)	8/5/2014 0:00	2.59	2.59	Micrograms per Liter	WON01	0.517	0.517	RI0002007R-10A	Ambient River Monitoring Program	
Aluminum, Dissolved (as AL)	6/25/2014 0:00	5.4	5.4	Micrograms per Liter	WON14	0.517	0.517	RI0002007R-10A	Ambient River Monitoring Program	
Aluminum, Dissolved (as AL)	6/25/2014 0:00	7.96	7.96	Micrograms per Liter	WON01	0.517	0.517	RI0002007R-10A	Ambient River Monitoring Program	
	ave=	2.808666667								
Cadmium, Dissolved	6/25/2014 0:00	0	0	Micrograms per Liter	WON01	0.045	1	RI0002007R-10A	Ambient River Monitoring Program	
Cadmium, Dissolved	6/25/2014 0:00	0	0	Micrograms per Liter	WON14	0.045	1	RI0002007R-10A	Ambient River Monitoring Program	
Cadmium, Dissolved	8/5/2014 0:00	0	0	Micrograms per Liter	WON01	0.045	1	RI0002007R-10A	Ambient River Monitoring Program	
Cadmium, Dissolved	8/5/2014 0:00	0	0	Micrograms per Liter	WON14	0.045	1	RI0002007R-10A	Ambient River Monitoring Program	
Cadmium, Dissolved	9/9/2014 0:00	0	0	Micrograms per Liter	WON01	0.045	1	RI0002007R-10A	Ambient River Monitoring Program	
Cadmium, Dissolved	9/9/2014 0:00	0	0	Micrograms per Liter	WON14	0.045	1	RI0002007R-10A	Ambient River Monitoring Program	
	ave-	0								
Copper, Dissolved	6/25/2014 0:00	0.687		Micrograms per Liter	WON01	0.073	1	RI0002007R-10A	Ambient River Monitoring Program	
Copper, Dissolved	6/25/2014 0:00	0.77		Micrograms per Liter	WON14	0.073	1	RI0002007R-10A	Ambient River Monitoring Program	
Copper, Dissolved	8/5/2014 0:00	0.429		Micrograms per Liter	WON01	0.073	1	RI0002007R-10A	Ambient River Monitoring Program	
Copper, Dissolved	8/5/2014 0:00	0.324		Micrograms per Liter	WON14	0.073	1	RI0002007R-10A	Ambient River Monitoring Program	
Copper, Dissolved	9/9/2014 0:00	0.302		Micrograms per Liter	WON01	0.073	1	RI0002007R-10A	Ambient River Monitoring Program	
Copper, Dissolved	9/9/2014 0:00	0.448		Micrograms per Liter	WON14	0.073	1	RI0002007R-10A	Ambient River Monitoring Program	
	ave=	0.493333333								
Hardness	9/9/2014 0:00	23.1	23.1	Milligrams per Liter	WON14	1	1	RI0002007R-10A	Ambient River Monitoring Program	
Hardness	8/5/2014 0:00	28.2	28.2	Milligrams per Liter	WON14	1	1	RI0002007R-10A	Ambient River Monitoring Program	
Hardness	6/25/2014 0:00	28.3	28.3	Milligrams per Liter	WON14	1	1	RI0002007R-10A	Ambient River Monitoring Program	
Hardness	9/9/2014 0:00	35	35	Milligrams per Liter	WON01	1	1	RI0002007R-10A	Ambient River Monitoring Program	
Hardness	6/25/2014 0:00	40.6	40.6	Milligrams per Liter	WON01	1	1	RI0002007R-10A	Ambient River Monitoring Program	
Hardness	8/5/2014 0:00	44.6	44.6	Milligrams per Liter	WON01	1	1	RI0002007R-10A	Ambient River Monitoring Program	
HARDNESS	10/15/2019 11:30:00		33.8	mg/L	WON14	1.18		6.62	RI0002007R-10A	WRE- ARM
HARDNESS	07/17/2019 13:40:00		34.1	mg/L	WON14	1.18		6.62	RI0002007R-10A	WRE- ARM
HARDNESS	09/19/2019 11:15:00		35.1	mg/L	WON14	1.18		6.62	RI0002007R-10A	WRE- ARM
HARDNESS	09/19/2019 09:50:00		43.6	mg/L	WON01	1.18		6.62	RI0002007R-10A	WRE- ARM
HARDNESS	10/15/2019 10:15:00		43.8	mg/L	WON01	1.18		6.62	RI0002007R-10A	WRE- ARM
HARDNESS	07/17/2019 11:10:00		52	mg/L	WON01	1.18		6.62	RI0002007R-10A	WRE- ARM
		median:	35.05							
		(Note: a site-specific hardness of 21.8 mg/L was used instead.)								

Lead, Dissolved	8/5/2014 0:00	0	0	Micrograms per Liter	WON01	0.037	1	RI0002007R-10A	Ambient River Monitoring Program
Lead, Dissolved	8/5/2014 0:00	0	0	Micrograms per Liter	WON14	0.037	1	RI0002007R-10A	Ambient River Monitoring Program
Lead, Dissolved	9/9/2014 0:00	0	0	Micrograms per Liter	WON01	0.037	1	RI0002007R-10A	Ambient River Monitoring Program
Lead, Dissolved	9/9/2014 0:00	0	0	Micrograms per Liter	WON14	0.037	1	RI0002007R-10A	Ambient River Monitoring Program
Lead, Dissolved	6/25/2014 0:00	0.061		Micrograms per Liter	WON01	0.037	1	RI0002007R-10A	Ambient River Monitoring Program
Lead, Dissolved	6/25/2014 0:00	0.088		Micrograms per Liter	WON14	0.037	1	RI0002007R-10A	Ambient River Monitoring Program
	ave=	0.024833333							
Nitrogen, Ammonia Total as N	6/25/2014 0:00	0	0.007	Milligrams per Liter	WON14	0.014	0.1	RI0002007R-10A	Ambient River Monitoring Program
Nitrogen, Ammonia Total as N	9/9/2014 0:00	0.027	0.027	Milligrams per Liter	WON01	0.014	0.1	RI0002007R-10A	Ambient River Monitoring Program
Nitrogen, Ammonia Total as N	9/9/2014 0:00	0.03	0.03	Milligrams per Liter	WON14	0.014	0.1	RI0002007R-10A	Ambient River Monitoring Program
Nitrogen, Ammonia Total as N	8/5/2014 0:00	0.031	0.031	Milligrams per Liter	WON14	0.014	0.1	RI0002007R-10A	Ambient River Monitoring Program
Nitrogen, Ammonia Total as N	8/5/2014 0:00	0.032	0.032	Milligrams per Liter	WON01	0.014	0.1	RI0002007R-10A	Ambient River Monitoring Program
Nitrogen, Ammonia Total as N	6/25/2014 0:00	0.2	0.2	Milligrams per Liter	WON01	0.014	0.1	RI0002007R-10A	Ambient River Monitoring Program
	ave=	0.053							
pH	5/12/2012 0:00	6.42	6.42	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	6/5/2015 0:00	6.6	6.60	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	7/21/2016 0:00	6.67	6.67	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	10/24/2016 0:00	6.69	6.69	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	9/18/2015 0:00	6.7	6.70	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	6/25/2014 0:00	6.88	6.88	Standard Units	WON01	0	0.01	RI0002007R-10A	Ambient River Monitoring Program
pH	10/16/2010 0:00	6.89	6.89	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	6/25/2014 0:00	6.92	6.92	Standard Units	WON14	0	0.01	RI0002007R-10A	Ambient River Monitoring Program
pH	5/20/2014 0:00	6.93	6.93	Standard Units	WON01	0	0.01	RI0002007R-10A	Ambient River Monitoring Program
pH	9/11/2010 0:00	6.94	6.94	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	8/5/2014 0:00	6.95	6.95	Standard Units	WON14	0	0.01	RI0002007R-10A	Ambient River Monitoring Program
pH	5/20/2014 0:00	7	7.00	Standard Units	WON14	0	0.01	RI0002007R-10A	Ambient River Monitoring Program
pH	5/27/2010 0:00	7.02	7.02	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	7/17/2017 0:00	7.02	7.02	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	9/23/2016 0:00	7.09	7.09	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	9/9/2014 0:00	7.1	7.10	Standard Units	WON14	1	1	RI0002007R-10A	Ambient River Monitoring Program
pH	9/20/2014 0:00	7.1	7.10	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	7/17/2010 0:00	7.13	7.13	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	5/16/2013 0:00	7.13	7.13	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	9/9/2014 0:00	7.13	7.13	Standard Units	WON14	0	0.01	RI0002007R-10A	Ambient River Monitoring Program
pH	8/5/2014 0:00	7.15	7.15	Standard Units	WON14	1	1	RI0002007R-10A	Ambient River Monitoring Program
pH	9/28/2013 0:00	7.2	7.20	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	7/14/2014 0:00	7.2	7.20	Standard Units	WON14	0	0.01	RI0002007R-10A	Ambient River Monitoring Program
pH	7/31/2013 0:00	7.22	7.22	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	6/25/2014 0:00	7.22	7.22	Standard Units	WON14	1	1	RI0002007R-10A	Ambient River Monitoring Program
pH	8/5/2014 0:00	7.22	7.22	Standard Units	WON01	0	0.01	RI0002007R-10A	Ambient River Monitoring Program
pH	7/28/2012 0:00	7.25	7.25	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	6/25/2014 0:00	7.26	7.26	Standard Units	WON01	1	1	RI0002007R-10A	Ambient River Monitoring Program
pH	10/20/2012 0:00	7.28	7.28	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	7/19/2014 0:00	7.3	7.30	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI

pH	8/5/2014 0:00	7.32	7.32	Standard Units	WON01	1	1	RI0002007R-10A	Ambient River Monitoring Program
pH	7/14/2014 0:00	7.34	7.34	Standard Units	WON01	0	0.01	RI0002007R-10A	Ambient River Monitoring Program
pH	10/19/2017 0:00	7.36	7.36	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	9/9/2014 0:00	7.39	7.39	Standard Units	WON01	1	1	RI0002007R-10A	Ambient River Monitoring Program
pH	7/18/2015 0:00	7.4	7.40	Standard Units	WW113	1	1	RI0002007R-10A	Watershed Watch Lakes Program - URI
pH	9/9/2014 0:00	7.48	7.48	Standard Units	WON01	0	0.01	RI0002007R-10A	Ambient River Monitoring Program
pH	10/15/2019 11:30:00		7.28	pH	WON14			RI0002007R-10A	WRE- ARM
pH	09/19/2019 11:15:00		7.33	pH	WON14			RI0002007R-10A	WRE- ARM
pH	07/17/2019 13:40:00		7.39	pH	WON14			RI0002007R-10A	WRE- ARM
pH	09/19/2019 09:50:00		7.44	pH	WON01			RI0002007R-10A	WRE- ARM
pH	10/15/2019 10:15:00		7.49	pH	WON01			RI0002007R-10A	WRE- ARM
pH	07/17/2019 11:10:00		7.67	pH	WON01			RI0002007R-10A	WRE- ARM
		ave=	7.13						
		90th%ile=	7.399						
Zinc, Dissolved	8/5/2014 0:00	0	0	Micrograms per Liter	WON01	1.4	1.4	RI0002007R-10A	Ambient River Monitoring Program
Zinc, Dissolved	8/5/2014 0:00	0	0	Micrograms per Liter	WON14	1.4	1.4	RI0002007R-10A	Ambient River Monitoring Program
Zinc, Dissolved	9/9/2014 0:00	0	0	Micrograms per Liter	WON01	1.4	1.4	RI0002007R-10A	Ambient River Monitoring Program
Zinc, Dissolved	9/9/2014 0:00	0	0	Micrograms per Liter	WON14	1.4	1.4	RI0002007R-10A	Ambient River Monitoring Program
Zinc, Dissolved	6/25/2014 0:00	1.41	1.41	Micrograms per Liter	WON14	1.4	1.4	RI0002007R-10A	Ambient River Monitoring Program
Zinc, Dissolved	6/25/2014 0:00	1.68	1.68	Micrograms per Liter	WON01	1.4	1.4	RI0002007R-10A	Ambient River Monitoring Program
		ave=	0.515						

PART II  
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DEFINITIONS

## GENERAL REQUIREMENTS

(a) Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Chapter 46-12 of the Rhode Island General Laws and the Clean Water Act (CWA) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

- (1) The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.
- (2) The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307 or 308 of the Act is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment of not more than 1 year, or both.
- (3) Chapter 46-12 of the Rhode Island General Laws provides that any person who violates a permit condition is subject to a civil penalty of not more than \$5,000 per day of such violation. Any person who willfully or negligently violates a permit condition is subject to a criminal penalty of not more than \$10,000 per day of such violation and imprisonment for not more than 30 days, or both. Any person who knowingly makes any false statement in connection with the permit is subject to a criminal penalty of not more than \$5,000 for each instance of violation or by imprisonment for not more than 30 days, or both.

(b) Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

(c) Need to Halt or Reduce Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(d) Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.



(e) Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures, and, where applicable, compliance with DEM "Rules and Regulations Pertaining to the Operation and Maintenance of Wastewater Treatment Facilities" and "Rules and Regulations Pertaining to the Disposal and Utilization of Wastewater Treatment Facility Sludge." This provision requires the operation of back-up or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the permit.

(f) Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause, including but not limited to: (1) Violation of any terms or conditions of this permit; (2) Obtaining this permit by misrepresentation or failure to disclose all relevant facts; or (3) A change in any conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(g) Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

(h) Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

(i) Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- (1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- (2) Have access to and copy, at reasonable times any records that must be kept under the conditions of this permit;
- (3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

- (4) Sample or monitor any substances or parameters at any location, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA or Rhode Island law.

(j) Monitoring and Records

- (1) Samples and measurements taken for the purpose of monitoring shall be representative of the volume and nature of the discharge over the sampling and reporting period.
- (2) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings from continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 5 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.
- (3) Records of monitoring information shall include:
  - (i) The date, exact place, and time of sampling or measurements;
  - (ii) The individual(s) who performed the sampling or measurements;
  - (iii) The date(s) analyses were performed;
  - (iv) The individual(s) who performed the analyses;
  - (v) The analytical techniques or methods used; and
  - (vi) The results of such analyses.
- (4) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136 and applicable Rhode Island regulations, unless other test procedures have been specified in this permit.
- (5) The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall upon conviction, be punished by a fine of not more than \$10,000 per violation or by imprisonment for not more than 6 months per violation or by both. Chapter 46-12 of the Rhode Island General Laws also provides that such acts are subject to a fine of not more than \$5,000 per violation, or by imprisonment for not more than 30 days per violation, or by both.
- (6) Monitoring results must be reported on a Discharge Monitoring Report (DMR).
- (7) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136, applicable State regulations, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(k) Signatory Requirement

All applications, reports, or information submitted to the Director shall be signed and certified in accordance with 250-RICR-150-10-1.12 of the Rhode Island Pollutant Discharge Elimination System (RIPDES) Regulations. Rhode Island General Laws, Chapter 46-12 provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$5,000 per violation, or by imprisonment for not more than 30 days per violation, or by both.

(l) Reporting Requirements

- (1) Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.
- (2) Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with the permit requirements.
- (3) Transfers. This permit is not transferable to any person except after written notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under State and Federal law.
- (4) Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
- (5) Twenty-four hour reporting. The permittee shall immediately report any noncompliance which may endanger health or the environment by calling DEM at (401) 222-4700 or (401) 222-3070 at night.

A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

The following information must be reported immediately:

- (i) Any unanticipated bypass which causes a violation of any effluent limitation in the permit; or
- (ii) Any upset which causes a violation of any effluent limitation in the permit; or
- (iii) Any violation of a maximum daily discharge limitation for any of the pollutants specifically listed by the Director in the permit.

The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

- (6) Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (1), (2), and (5), of this section, at the time monitoring reports are submitted. The reports shall contain the information required in paragraph (1)(5) of the section.
- (7) Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, they shall promptly submit such facts or information.

(m) Bypass

"Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

- (1) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (2) and (3) of this section.
- (2) Notice.
  - (i) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass.
  - (ii) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in 250-RICR-150-10-1.14(R) of the RIPDES Regulations.
- (3) Prohibition of bypass.
  - (i) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:
    - (A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage, where "severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production;
    - (B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
    - (C) The permittee submitted notices as required under paragraph (2) of this section.

- (ii) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph (3)(i) of this section.

(n) Upset

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

- (1) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph (2) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- (2) Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - (a) An upset occurred and that the permittee can identify the cause(s) of the upset;
  - (b) The permitted facility was at the time being properly operated;
  - (c) The permittee submitted notice of the upset as required in 250-RICR-150-10-1.14(R) of the RIPDES Regulations; and
  - (d) The permittee complied with any remedial measures required under 250-RICR-150-10-1.14(E) of the RIPDES Regulations.
- (3) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(o) Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. Discharges which cause a violation of water quality standards are prohibited. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different or increased discharges of pollutants must be reported by submission of a new NPDES application at least 180 days prior to commencement of such discharges, or if such changes will not violate the effluent limitations specified in this permit, by notice, in writing, to the Director of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by the permit constitutes a violation.

(p) Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner consistent with applicable Federal and State laws and regulations including, but not limited to the CWA and the Federal Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq., Rhode Island General Laws, Chapters 46-12, 23-19.1 and regulations promulgated thereunder.

(q) Power Failures

In order to maintain compliance with the effluent limitation and prohibitions of this permit, the permittee shall either:

In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or if such alternative power source is not in existence, and no date for its implementation appears in Part I,

Halt reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

(r) Availability of Reports

Except for data determined to be confidential under paragraph (w) below, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the DEM, 235 Promenade Street, Providence, Rhode Island 02908. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA and under Section 46-12-14 of the Rhode Island General Laws.

(s) State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law.

(t) Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, and local laws and regulations.

(u) Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

(v) Reopener Clause

The Director reserves the right to make appropriate revisions to this permit in order to incorporate any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA or State law. In accordance with 250-RICR-150-10-1.16 and 250-RICR-150-10-1.24 of the RIPDES Regulations, if any effluent standard or prohibition, or water quality standard is promulgated under the CWA or under State law which is more stringent than any limitation on the pollutant in the permit, or controls a pollutant not limited in the permit, then the Director may promptly reopen the permit and modify or revoke and reissue the permit to conform to the applicable standard.

(w) Confidentiality of Information

(1) Any information submitted to DEM pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, DEM may make the information available to the public without further notice.

(2) Claims of confidentiality for the following information will be denied:

- (i) The name and address of any permit applicant or permittee;
- (ii) Permit applications, permits and any attachments thereto; and
- (iii) NPDES effluent data.

(x) Best Management Practices

The permittee shall adopt Best Management Practices (BMP) to control or abate the discharge of toxic pollutants and hazardous substances associated with or ancillary to the industrial manufacturing or treatment process and the Director may request the submission of a BMP plan where the Director determines that a permittee's practices may contribute significant amounts of such pollutants to waters of the State.

(y) Right of Appeal

Within thirty (30) days of receipt of notice of a final permit decision, the permittee or any interested person may submit a request to the Director for an adjudicatory hearing to reconsider or contest that decision. The request for a hearing must conform to the requirements of 250-RICR-150-10-1.50 of the RIPDES Regulations.

**DEFINITIONS**

1. For purposes of this permit, those definitions contained in the RIPDES Regulations and the Rhode Island Pretreatment Regulations shall apply.
2. The following abbreviations, when used, are defined below.

cu. M/day or M <sup>3</sup> /day	cubic meters per day
mg/l	milligrams per liter
ug/l	micrograms per liter
lbs/day	pounds per day
kg/day	kilograms per day
Temp. °C	temperature in degrees Centigrade
Temp. °F	temperature in degrees Fahrenheit
Turb.	turbidity measured by the Nephelometric Method (NTU)
TNFR or TSS	total nonfilterable residue or total suspended solids
DO	dissolved oxygen
BOD	five-day biochemical oxygen demand unless otherwise specified
TKN	total Kjeldahl nitrogen as nitrogen
Total N	total nitrogen
NH <sub>3</sub> -N	ammonia nitrogen as nitrogen
Total P	total phosphorus
COD	chemical oxygen demand
TOC	total organic carbon
Surfactant	surface-active agent
pH	a measure of the hydrogen ion concentration
PCB	polychlorinated biphenyl
CFS	cubic feet per second
MGD	million gallons per day
Oil & Grease	Freon extractable material
Total Coliform	total coliform bacteria
Fecal Coliform	total fecal coliform bacteria
ml/l	milliliter(s) per liter
NO <sub>3</sub> -N	nitrate nitrogen as nitrogen
NO <sub>2</sub> -N	nitrite nitrogen as nitrogen
NO <sub>3</sub> -NO <sub>2</sub>	combined nitrate and nitrite nitrogen as nitrogen
Cl <sub>2</sub>	total residual chlorine