



RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

235 Promenade Street, Providence, RI 02908-5767

TDD 401-222-4462

September 23, 2014

CERTIFIED MAIL

Mr. Frank Tucker Jr., District Delivery Manager
Petro Holdings, Inc.
141 Knight St.
Warwick, RI 02940

**RE: Petroleum Heat and Power Company, Inc. Final Permit
RIPDES Application No. RI0023418**

Dear Mr. Tucker:

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 permit.

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 Aaron Mello of the State Permits Staff at (401) 222-4700, extension 7405.

Sincerely,

Joseph B. Haberek, P.E.
Principal Sanitary Engineer

JBH:am

Enclosures

cc: David Turin, EPA Region 1 (Electronic Copy)
Annie McFarland, DEM/OWR (Electronic Copy)
Eric Beck, P.E., DEM/OWR (Electronic Copy)
Suzanne Melo, Petro (Electronic Copy)
Tim Keane, P.E., Fuss & O'Neill (Electronic Copy)



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:

Bonnie Stewart, Clerk
Office of Administrative Adjudication
One Capitol Hill, Second Floor
Providence, RI 02903

Any request for a formal hearing must conform to the requirements of Rule 49 of the State Regulations.

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 Rule 50, 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:

Angelo S. Liberti, P.E.
Chief 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 Rule 49.

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,

Petroleum Heat and Power Company, Inc.
2187 Atlantic Street
Stamford, CT 06902

is authorized to discharge from a facility located at

Petroleum Heat and Power Company, Inc.
2579 South County Trail
East Greenwich, Rhode Island 02818

to receiving waters named

Frenchtown Brook

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

This permit shall become effective on November 1, 2014.

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

This permit supersedes the permit issued on October 26, 2009.

This permit consists of 15 pages in Part I including effluent limitations, monitoring requirements, etc. and 10 pages in Part II including General Conditions.

Signed this 23rd day of September, 2014



Angelo S. Liberti, P.E., Chief of Surface Water Protection
Office of Water Resources
Rhode Island Department of Environmental Management
Providence, Rhode Island

PART I

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 001A. Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations		Concentration - specify units		Monitoring Requirement	
	Quantity - lbs./day	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Flow	2.16 MGD				Quarterly	Estimate ¹
Oil & Grease				15 mg/l	Quarterly	Grab ²
TSS				20 mg/l	Quarterly	Grab ²
Polynuclear Aromatic Hydrocarbons (PAHs) ³						
Acenaphthene				--- ug/l	Annually	Grab ²
Acenaphthylene				--- ug/l	Annually	Grab ²
Anthracene				--- ug/l	Annually	Grab ²
Benzo (a) anthracene				--- ug/l	Annually	Grab ²
Benzo (a) pyrene				--- ug/l	Annually	Grab ²
Benzo (b) fluoranthene				--- ug/l	Annually	Grab ²
Benzo (ghi) perylene				--- ug/l	Annually	Grab ²
Benzo (k) fluoranthene				--- ug/l	Annually	Grab ²
Chrysene				--- ug/l	Annually	Grab ²
Dibenzo (a,h) anthracene				--- ug/l	Annually	Grab ²
Fluoranthene				--- ug/l	Annually	Grab ²

Fluorene	---	ug/l	Annually	Grab ²
Indeno (1,2,3-cd) pyrene	---	ug/l	Annually	Grab ²
Naphthalene	---	ug/l	Annually	Grab ²
Phenanthrene	---	ug/l	Annually	Grab ²
Pyrene	---	ug/l	Annually	Grab ²
Sum of All PAHs	---	ug/l	Annually	Grab ²

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

¹ The daily maximum flow for the sampling event shall be estimated by collecting a set volume over a measured period of time. The estimated flow will be calculated by dividing the volume collected by the time interval, and then converting to MGD.

² Wet weather samples must be collected during the first 30 minutes from discharges resulting from a storm event that is greater than 0.1 inch of rainfall in a 24-hour period and at least 72 hours from the previously measurable (greater than 0.1 inch of rainfall in a 24-hour period) storm event. If this is not feasible, wet weather samples may be taken within the first hour of discharge and noted on the Discharge Monitoring Report.

³ The concentration of each of the 16 PAHs must be reported, as well as the sum of all 16 PAHs.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: at Outfall 001A (storm water after treatment by the oil/water separator, sampled during a measurable storm event.)

2.
 - a. The pH of the effluent shall not be less than 6.5 nor greater than 9.0 standard units at any time, unless these values are exceeded due to natural causes.
 - b. The discharge shall not cause visible discoloration of the receiving waters.
 - c. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
3. The permittee shall not add chemicals (i.e., disinfecting agents, detergents, emulsifiers, etc.) or "bioremedial agents including microbes" to the collection and treatment system without prior approval from DEM.
4. The permittee shall not discharge any sludge and/or bottom deposits from any storage tank, basin and/or diked area to the receiving water. Examples of storage tanks and/or basins include, but are not limited to: primary catch basins, stilling basins, the oil/water (O/W) separator, observation basins with baffles, petroleum product storage tanks, baffled storage tanks collecting spills, and tank truck loading rack sumps.
5. In addition to the required sampling results submitted in accordance with Part I.A.1. of this permit, the permittee must provide the date and duration (hours) of the storm events sampled, the total depth of rainfall (inches), and the total volume of runoff (Ft³). This information must be submitted with the Discharge Monitoring Report forms at the frequency specified in Part I.E.2 of this permit.
6. This permit does not authorize discharges to the separate storm sewer system or to waters of the State from floor drains and trench drains located inside of buildings.
7. This permit does not authorize the discharge of sanitary waste water to waters of the State.
8. The discharge of contaminated groundwater, including contaminated groundwater from infiltration/inflow, into the storm water collection system or into any oil/water separator is prohibited and shall be addressed by the permittee pursuant to Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases ("Remediation Regulations") under the direction of the Office of Waste Management, in association with the Office of Water Resources. Nothing in this paragraph shall be construed to relieve the permittee's obligation to investigate and/or remediate contaminated groundwater in compliance with the Remediation Regulations or the regulations of the Office of Water Resources.
9. Unless identified by the permittee or the DEM as significant sources of pollutants to waters of the United States, the following non-storm water discharges are authorized under this permit to enter the storm water drainage system: discharges from fire fighting activities; fire hydrant flushings; external building wash down that do not use detergents; lawn watering; uncontaminated groundwater; springs; air conditioning condensate; potable waterline flushings; and foundation or footing drains where flows are not contaminated with process materials, such as solvents, or contaminated by contact with soils, where spills or leaks of toxic or hazardous materials have occurred. If any of these discharges may reasonably be expected to be present and to be mixed with storm water discharges, they must be specifically identified and addressed in the facility's Storm Water Pollution Prevention Plan (SWPPP) required in Part I.C.
10. There shall be no discharge of tank bottom draw-off water (water which separates from product during storage and settles to the tank bottom) to waters of the State.
11. The permittee shall notify the Office of Water Resources at least twenty-four (24) hours prior to the commencement of any proposed hydrostatic-test water discharges. Prior to

testing, the interior of the tank(s) and/or piping being tested shall be cleaned and certified to be free of petroleum product. There shall be no discharge of tank and/or pipe cleaning residual/debris to the oil/water separator. At a minimum, four (4) representative samples shall be taken of the hydrostatic-test water: one (1) grab sample of the influent prior to entering the tank and three (3) serial-grab samples of the effluent from the tank. The influent grab sample shall be taken approximately midway through the fill segment of the hydrostatic-test procedure. The three (3) effluent serial-grab samples shall be taken over the duration of the entire discharge segment of the hydrostatic-test procedure. The first serial-grab sample shall be taken during the initial phase of the discharge; the second serial grab sample is to be taken midway through the discharge; and the final sample shall be taken at the end of the discharge. All effluent samples should be taken directly from the effluent of the tank prior to discharge into the oil/water separator and/or mixing with any other authorized wastestreams. These samples should provide adequate characterization of the influent and effluent hydrostatic-test water.

These influent and effluent samples shall be analyzed for the following parameters:

- | | | | |
|----|------------------------------|----|--|
| a. | Total Suspended Solids (TSS) | d. | Chemical Oxygen Demand (COD) |
| b. | Oil & Grease (O/G) | e. | Dissolved Oxygen (DO) |
| c. | Total Iron | f. | pH |
| | | g. | Polynuclear Aromatic Hydrocarbons (PAHs) |

Please be advised that the hydrostatic test water released from the tank(s), after treatment through the oil/water separator, must satisfy all the effluent limitations and conditions of this permit as required in Part I.A.1 of the permit. The surface of the oil/water separator should be routinely observed during hydrostatic test water discharges to determine if there is any detectable increase in the separated oil layer to prevent inadvertent hydrocarbon release to the receiving water(s). A logbook shall be kept on site at all times to document the start and end of each hydrostatic test, the total flow discharged and all monitoring data.

Should any visual inspection or suspicious odor indicate the presence of petroleum while inspecting the oil/water separator as required above or if laboratory results from the representative samples of the discharge become available that may indicate an exceedance of the permit effluent limits, the transfer shall be halted immediately followed by notification to the RI DEM of the suspended discharge. After the discharge of the hydrostatic test water has been completed, the permittee shall submit a letter/report to the RI DEM within thirty (30) days, summarizing the results of the transfer. This report shall contain: the date(s) of hydrostatic test water transfer; the volume of hydrostatic test water transferred; and the analytically determined values of the discharge parameters.

12. There shall be no discharge of waters and/or wastewaters generated during cleaning of the aboveground storage tank. All wastes generated during cleaning process shall be collected by a Rhode Island licensed hazardous waste hauler and treated/disposed off-site at a permitted hazardous waste treatment facility.
13. 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 µg/l);

- (2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/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. §122.21(g)(7); or
 - (4) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(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 µg/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. §122.21(g)(7); or
 - (4) Any other notification level established by the Director in accordance with 40 C.F.R. §122.44(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.
14. This permit serves as the State's Water Quality Certificate for the discharges described herein.

B. OPERATION AND MAINTENANCE

1. All surface runoff from process or work areas at the facility shall be diverted to the oil/water separator. Process or work areas are defined for the purpose of this permit as all those areas subject to spills and leaks or raw materials or products containing toxic or hazardous substances, (i.e. including, diked areas, docks, loading or unloading areas and yard areas).
2. The release of accumulated storm water from the secondary containment area shall be discharged during dry weather to ensure that it does not exceed the design flow rate for the oil/water separator or cause violations of the effluent limitations specified in this permit. The design flow rate for the oil/water separator servicing outfall 001A is 1500 gallons per minute or 2.16 MGD.
3. All storm water runoff accumulated in the secondary containment area shall be discharged to the oil/water separator no sooner than twenty-four (24) hours after completion of the most recent storm event and only after first determining that the accumulated water is free of product or sheen. If a sheen is detected by visual observations, the area will be covered with oil absorbent blankets to collect petroleum product. After the sheen has been absorbed and the absorbent blankets have been removed, the draining process will begin. If the amount of petroleum product is such that professional clean-up action is required, then all the liquid from the containment area shall be removed by a Rhode Island-licensed hazardous waste hauler and properly disposed of off-site.

4. The McTighe POWS 10000 Oil/Water Separator shall be maintained on a semi-annual basis in accordance with the manufacturer's specifications. The oil/water separator shall be inspected on a monthly basis to assure its proper operation and determine the amounts of accumulation of free-floating hydrocarbon product and bottom sludge. If the accumulation of free-floating hydrocarbon product exceeds six (6) inches, the product shall be removed in accordance with the manufacturer's specifications. If the surface elevation of the accumulated bottom sludge is less than two (2) inches below the top-of-sludge baffle elevation, the bottom sludge shall be removed in accordance with the manufacturer's specifications. Records of all inspections and removal of accumulated bottom sludge of free-floating hydrocarbon product shall be maintained on-site and made available to the DEM upon request.
5. The catch basins shall be inspected on a monthly basis to assure structural integrity and determine the amount of accumulation of solids. Catch basins shall be scheduled for clean-out when the depth of solids exceeds one-half the height of the effluent pipe invert above the basin bottom.
6. The storm water collection and treatment system shall be operated and maintained in order to provide optimal treatment of the storm water prior to discharge to the receiving water.
7. The permittee shall assure the proper management of solid and hazardous waste in accordance with regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1978 (40 U.S.C. 6901 et seq.) or amendments thereto.

C. STORM WATER POLLUTION PREVENTION PLAN / COMPREHENSIVE SITE EVALUATION REQUIREMENTS

1. A Storm Water Pollution Prevention Plan (SWPPP) shall be maintained and implemented by the permittee. 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 SWPPP 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 SWPPP shall be signed by the permittee in accordance with RIPDES Rule 12 and retained on-site. The SWPPP shall be made available upon request by the DEM.
3. The permittee may be notified at any time that the SWPPP does not meet one or more of the minimum requirements of this part. After such notification from the DEM, the permittee shall make changes to the SWPPP and shall submit a written certification that the requested changes have been made. Unless otherwise provided by the DEM, the permittee shall have thirty (30) days after such notification to make the necessary changes.
4. The permittee shall immediately amend the SWPPP whenever there is a change in design, construction, operation, or maintenance, which has a significant effect of 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 associated with industrial activity. Changes must be noted and then submitted to DEM within fourteen (14) days. Amendments to the SWPPP may be reviewed by DEM in the same manner as Part I.C.3 of this permit.
5. The SWPPP shall include, at a minimum, the following items:

- a. Description of Potential Pollutant Sources. The SWPPP 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. Each plan shall include:
- (1) A site map indicating: a delineation of the drainage area of each storm water outfall, 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 RIPDES Rule 11.02(a)(14)(iii)-(v) 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; and
- 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 SWPPP 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 SWPPP must identify a specific individual(s) within the facility organization as members of a team that are responsible for developing the SWPPP and assisting the plant manager in its implementation, maintenance, and revision. The SWPPP must clearly identify the responsibilities of each team member. The activities and responsibilities of the team must address all aspects of facility's SWPPP.
- (2) *Risk Identification and Assessment/Material Inventory.* The SWPPP must assess the potential of various sources which contribute pollutants to storm water discharge associated with the industrial activity. The SWPPP 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, 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. If applicable, the following areas must be specifically addressed:
 - i. Vehicle and Equipment Storage Areas: The storage of vehicles and equipment with actual or potential fluid leaks must be confined to designated areas (delineated on the site map). The SWPPP must describe measures that prevent or minimize contamination of the storm water runoff from these areas. The facility shall consider the use of drip pans under vehicles and equipment, indoor storage of the vehicles and equipment, installation of berming and diking of this area, use of absorbents, roofing or covering storage areas, cleaning pavement surface to remove oil and grease, or other equivalent methods.
 - ii. Truck Loading Racks: The SWPPP must describe measures that prevent or minimize contamination of the storm water runoff from fuel loading areas. The facility shall consider berming the loading rack area(s), using spill and overflow protection and cleanup equipment, minimizing run-on/runoff of storm water to the loading rack area(s) by way of storm water drains, using dry cleanup methods, collecting the storm water runoff and providing treatment or recycling, or other equivalent measures.
 - iii. Material Storage Areas: Storage units of all materials (e.g., used oil, used oil filters, spent solvents, paint wastes, radiator fluids, transmission fluids, hydraulic fluids) must be maintained in good condition, so as to prevent contamination of storm water, and plainly labeled (e.g., "used oil", "spent solvents", etc.). The SWPPP must describe measures that prevent or minimize

contamination of the storm water runoff from such storage areas. The facility shall consider indoor storage of the materials, installation of berming and diking of the area, minimizing run-on/runoff of storm water to the areas, using dry cleanup methods, collecting the storm water runoff and providing treatment, or other equivalent methods.

- iv. Vehicle and Equipment Cleaning Areas: The SWPPP must describe measures that prevent the discharge of vehicle and equipment wash waters, including tank cleaning operations. The facility shall consider performing all cleaning operations indoors, covering the cleaning operation, ensuring that all washwaters drain to the intended collection system, collecting the storm water runoff from the cleaning area and providing treatment or recycling, or other equivalent measures. These discharges are not authorized by this permit.
 - v. Vehicle and Equipment Maintenance Areas: The SWPPP must describe measures that prevent or minimize contamination of the storm water runoff from all areas used for vehicle and equipment maintenance. The facility shall consider performing all maintenance activities indoors, using drip pans, maintaining an organized inventory of materials used in the shop, draining all parts of fluids prior to disposal, prohibiting wet cleanup practices where the practices would result in the discharge of pollutants to storm water drainage systems, using dry cleanup methods, collecting the storm water runoff from the maintenance area and providing treatment or recycling, minimizing run-on/runoff of storm water areas or other equivalent measures.
- (5) *Spill Prevention and Response Procedure*. Areas where potential spills can occur, and their accompanying drainage points, must be identified clearly in the SWPPP. The potential for spills to enter the storm water drainage system must be eliminated wherever feasible. Where appropriate, specific material handling procedures, storage requirements, and procedures for cleaning up spills must be identified in the SWPPP and made available to the appropriate personnel. The necessary equipment to implement a clean up must also be made available to personnel. The permittee shall immediately notify the office of releases in excess of reportable quantities.
 - (6) *Storm Water Management*. The SWPPP must contain a narrative consideration of the appropriateness of traditional storm water management practices. Based on an assessment of the potential of various sources at the plant to contribute pollutants to storm water discharges associated with industrial activity, the SWPPP must provide that measures, determined to be reasonable and appropriate, must be implemented and maintained.
 - (7) *Sediment and Erosion Prevention*. The SWPPP 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*. Employee training programs must inform personnel responsible for implementing activities identified in the SWPPP, or otherwise responsible for storm water management at all levels, of the components and goals of the SWPPP. Training should address topics such as spill response, good housekeeping, and material management

practices. The SWPPP must identify periodic dates for such training.

- (9) *Disposal Procedures.* The disposal procedures for tank bottom waters, tank bottom sludge, oil/water separator sediments, oil/water separator oils, oil absorbent cleaning material(s) and any washdown waters containing detergents, dispersants, emulsifiers, etc. must be documented in the SWPPP.
 - (10) *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.
 - (11) *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.
- c. Site Inspection. An annual site inspection must be conducted by appropriate personnel named in the SWPPP to verify that the description of potential pollutant sources 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 SWPPP are being implemented and are adequate. The following areas shall be included in all inspections: storage areas for vehicles and equipment awaiting maintenance, truck loading rack area(s), vehicle and equipment maintenance areas (both indoors and outdoors), material storage areas, vehicle and equipment cleaning areas, and loading and unloading areas. A tracking or follow up procedure must be used to ensure that the appropriate action has been taken in response to the inspection. A copy of the annual site inspection report and records documenting significant observations made during the site inspection must be prepared by January 15th of each year, for the previous calendar year, and retained as part of the SWPPP for a minimum of five (5) years.
- d. 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.

D. DETECTION LIMITS

The permittee shall assure that all testing required by this permit, is performed in conformance with the method detection limits listed below. 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 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 required MDL from this section shall be included 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.

Volatiles - EPA Method 624		MDL ug/l (ppb)	Pesticides - EPA Method 608		MDL ug/l (ppb)
1V	acrolein	10.0	18P	PCB-1242	0.289
2V	acrylonitrile	5.0	19P	PCB-1254	0.298
3V	benzene	1.0	20P	PCB-1221	0.723
5V	bromoform	1.0	21P	PCB-1232	0.387
6V	carbon tetrachloride	1.0	22P	PCB-1248	0.283
7V	chlorobenzene	1.0	23P	PCB-1260	0.222
8V	chlorodibromomethane	1.0	24P	PCB-1016	0.494
9V	chloroethane	1.0	25P	toxaphene	1.670
10V	2-chloroethylvinyl ether	5.0			
11V	chloroform	1.0	Base/Neutral - EPA Method 625		MDL ug/l (ppb)
12V	dichlorobromomethane	1.0	1B	acenaphthene *	1.0
14V	1,1-dichloroethane	1.0	2B	acenaphthylene *	1.0
15V	1,2-dichloroethane	1.0	3B	anthracene *	1.0
16V	1,1-dichloroethylene	1.0	4B	benzidine	4.0
17V	1,2-dichloropropane	1.0	5B	benzo(a)anthracene *	0.013
18V	1,3-dichloropropylene	1.0	6B	benzo(a)pyrene *	0.023
19V	ethylbenzene	1.0	7B	3,4-benzofluoranthene *	0.018
20V	methyl bromide	1.0	8B	benzo(ghi)perylene *	2.0
21V	methyl chloride	1.0	9B	benzo(k)fluoranthene *	0.017
22V	methylene chloride	1.0	10B	bis(2-chloroethoxy)methane	2.0
23V	1,1,2,2-tetrachloroethane	1.0	11B	bis(2-chloroethyl)ether	1.0
24V	tetrachloroethylene	1.0	12B	bis(2-chloroisopropyl)ether	1.0
25V	toluene	1.0	13B	bis(2-ethylhexyl)phthalate	1.0
26V	1,2-trans-dichloroethylene	1.0	14B	4-bromophenyl phenyl ether	1.0
27V	1,1,1-trichloroethane	1.0	15B	butylbenzyl phthalate	1.0
28V	1,1,2-trichloroethane	1.0	16B	2-chloronaphthalene	1.0
29V	trichloroethylene	1.0	17B	4-chlorophenyl phenyl ether	1.0
31V	vinyl chloride	1.0	18B	chrysene *	0.15
			19B	dibenzo (a,h) anthracene *	0.03
Acid Compounds - EPA Method 625		MDL ug/l (ppb)	20B	1,2-dichlorobenzene	1.0
1A	2-chlorophenol	1.0	21B	1,3-dichlorobenzene	1.0
2A	2,4-dichlorophenol	1.0	22B	1,4-dichlorobenzene	1.0
3A	2,4-dimethylphenol	1.0	23B	3,3' -dichlorobenzidine	2.0
4A	4,6-dinitro-o-cresol	1.0	24B	diethyl phthalate	1.0
5A	2,4-dinitrophenol	2.0	25B	dimethyl phthalate	1.0
6A	2-nitrophenol	1.0	26B	di-n-butyl phthalate	1.0
7A	4-nitrophenol	1.0	27B	2,4-dinitrotoluene	2.0
8A	p-chloro-m-cresol	2.0	28B	2,6-dinitrotoluene	2.0
9A	pentachlorophenol	1.0	29B	di-n-octyl phthalate	1.0
10A	phenol	1.0	30B	1,2-diphenylhydrazine (as azobenzene)	1.0
11A	2,4,6-trichlorophenol	1.0	31B	fluoranthene *	1.0
Pesticides - EPA Method 608		MDL ug/l (ppb)	32B	fluorene *	1.0
1P	aldrin	0.059	33B	hexachlorobenzene	1.0
2P	alpha-BHC	0.058	34B	hexachlorobutadiene	1.0
3P	beta-BHC	0.043	35B	hexachlorocyclopentadiene	2.0
4P	gamma-BHC	0.048	36B	hexachloroethane	1.0
5P	delta-BHC	0.034	37B	indeno (1,2,3-cd) pyrene *	0.043
6P	chlordane	0.211	38B	isophorone	1.0
7P	4,4' -DDT	0.251	39B	naphthalene *	1.0
8P	4,4' -DDE	0.049	40B	nitrobenzene	1.0
9P	4,4' -DDD	0.139	41B	N-nitrosodimethylamine	1.0
10P	dieldrin	0.082	42B	N-nitrosodi-n-propylamine	1.0
11P	alpha-endosulfan	0.031	43B	N-nitrosodiphenylamine	1.0
12P	beta-endosulfan	0.036	44B	phenanthrene *	1.0
13P	endosulfan sulfate	0.109	45B	pyrene *	1.0
14P	endrin	0.050	46B	1,2,4-trichlorobenzene	1.0
15P	endrin aldehyde	0.062			
16P	heptachlor	0.029			
17P	heptachlor epoxide	0.040			

OTHER TOXIC POLLUTANTS

	MDL ug/l (ppb)
BOD ₅	4.0 mg/l
TSS	2.0 mg/l
Fecal Coliform	2.0 MPN/100 ml
TRC	5.0 mg/l
Antimony, Total	3.0
Arsenic, Total	1.0
Beryllium, Total	0.2
Cadmium, Total	0.1
Chromium, Total	1.0
Chromium, Hexavalent***	20.0
Copper, Total	1.0
Lead, Total	1.0
Mercury, Total	0.2
Nickel, Total	1.0
Selenium, Total	2.0
Silver, Total	0.5
Thallium, Total	1.0
Zinc, Total	5.0
Asbestos	**
Cyanide, Total	10.0
Phenols, Total***	50.0
TCDD	**
MTBE (Methyl Tert Butyl Ether)	1.0
Total Xylenes	0.5
Ethanol	2.0 mg/l

* 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:

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.

E. MONITORING AND REPORTING

1. Monitoring

All monitoring required by this permit shall be done in accordance with sampling and analytical testing procedures specified in Federal Regulations (40 CFR Part 136).

2. Reporting

Monitoring results obtained during the previous quarterly period shall be summarized and reported on Discharge Monitoring Report (DMR) Forms, postmarked no later than the 15th day of the month following the completed quarter. A copy of the analytical laboratory report, specifying analytical methods used, shall be included with each report submission.

Quarterly monitoring periods shall be defined as follows:

<u>Quarter</u>	<u>Period</u>	<u>DMR Postmark Deadline</u>
1 st	January 1 – March 31	April 15
2 nd	April 1 – June 30	July 15
3 rd	July 1 – September 30	October 15
4 th	October 1 – December 31	January 15

Signed copies of these, and all other reports required herein, shall be submitted to:

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

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

STATEMENT OF BASIS

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

RIPDES PERMIT NO.

RI0023418

NAME AND ADDRESS OF APPLICANT:

Petroleum Heat and Power Company, Inc.
2187 Atlantic Street
Stamford, CT 06902

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Petroleum Heat and Power Company, Inc.
2579 South County Trail
East Greenwich, Rhode Island 02818

RECEIVING WATER:

Frenchtown Brook
(Water body ID#: RI0007028R-01)

CLASSIFICATION:

A

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

The above-named applicant has applied to the Rhode Island Department of Environmental Management (DEM) for reissuance of a RIPDES Permit to discharge into the designated receiving water. The applicants discharge consists of storm water runoff and hydrostatic test water. The discharge is to Frenchtown Brook.

II. Limitations and Conditions

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

III. Description of Discharge

The discharge is composed of storm water runoff from the terminal site, parking lot and secondary containment or diked area surrounding the storage tank, hydrostatic test water, and

any allowable non-storm water discharges. Allowable non-storm water discharges are limited to treated effluent from firefighting activities; fire hydrant flushings; hydrostatic test water; lawn watering; uncontaminated groundwater; springs; air conditioning condensate; potable waterline flushings; foundation or footing drains where flows are not contaminated with process materials, such as solvents, or contaminated by contact with soils, where spills or leaks of toxic or hazardous materials have occurred; and potable water sources which include vehicle, equipment, and surface wash down waters which do not have chemicals (such as solvents, soaps, emulsifiers, and/or detergents) added, and must be identified in the facility's SWPPP. All storm water and hydrostatic test water will be treated by an oil/water separator prior to discharge from Outfall 001.

Outfall 001 discharges to the Frenchtown Brook in the segment defined as water body ID number RI0007028R-01. This segment is described as the Frenchtown Brook in the Towns of West Greenwich and East Greenwich. This segment is located in East Greenwich and is classified as a Class A water body according to the RI Water Quality Regulations. Class A waters are designated for primary and secondary contact recreational activities and for fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have excellent aesthetic value. Also, this segment is listed as a cold water fishery designation. Currently, this segment was delisted during the 2012 assessment cycle, which is moved from Category 5/303(d) List to Category 4A, because a TMDL for the impairment has been completed and approved by EPA. For Frenchtown Brook and its tributaries *Enterococcus* was delisted due to a Statewide Bacteria TMDL for addressing 57 bacteria impaired water bodies that was approved on September 22, 2011.

A quantitative description of the discharge from Outfall 001 in terms of significant effluent parameters based on Discharge Monitoring Report data for the past five (5) years is shown in Attachment A-1. Attachment A-2 includes a site location map and Attachment A-3 includes a site plan that identifies the location of ASTs and other structures, the oil/water separator, and Outfall 001.

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

Description of the Facility

Petroleum Heat and Power Company, Inc. operates the Petroleum Heat and Power Company, Inc. Bulk Fuel Oil Terminal located at 2579 South County Trail in East Greenwich, RI. There is one 200,000-gallon No. 2 fuel oil storage tank at the site. The aboveground storage tank (AST) is located within a secondary containment (diked) area. The drainage valve for the diked area is kept closed and locked. Tank dike areas are drained during dry weather no sooner than twenty-four (24) hours after completion of each storm event and only after first determining that the drain water is free of product or sheen. If a sheen is detected the area will be covered with oil absorbent blankets to collect petroleum product. After the sheen has been absorbed and the absorbent blankets have been removed, the draining process will begin. If the amount of petroleum product is such that professional clean-up action is required then all the liquid from that containment area shall be removed by a Rhode Island-licensed hazardous waste hauler and properly disposed of off-site.

The previous permit identified Outfall 001A as the site-wide storm water discharge and Outfall 001B as the storm water from the secondary containment area and required separate monitoring from these two outfalls. After review of the historic data, it was determined that the pollutant characteristics for these two outfalls was similar. Therefore, this permit only requires monitoring of Outfall 001A, the site-wide storm water.

General Requirements

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. DEM's primary authority over the permit comes from EPA's delegation of the program in September 1984 under the Federal Clean Water Act (CWA).

Explanation of Effluent Limitation Derivation

Development of Rhode Island Pollutant Discharge Elimination System (RIPDES) permit limitations is a multi-step process consisting of the following steps: calculating allowable water quality-based discharge levels based on instream criteria, background data and available dilution; identifying any technology-based limits that apply to the facility; assigning appropriate Best Professional Judgement (BPJ) limits; setting the most stringent of these limits (water quality-based, technology-based, and BPJ-based) as the final allowable discharge levels; comparing existing permit limits to the new allowable discharge levels; and evaluating the ability of the facility to meet the final permit effluent limits.

The draft RIDES permit for Petroleum Heat and Power Company, Inc., authorizing the discharge of treated storm water, includes numeric effluent limitations and requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for additional protection of the environment. The effluent parameters in the draft permit are discussed in more detail below following the effluent limitation derivation for the one outfall being regulated by this permit:

Technology-based Limits

Technology based treatment requirements represent the minimum level of control that must be imposed under Section 402 and 301(b) of the CWA (see 40 CFR 125 Subpart A) to meet Best Practicable Control Technology Currently Available (BPT), Best Conventional Control Technology (BCT) for conventional pollutants, and Best Available Technology Economically Achievable (BAT) for toxic pollutants. EPA has not promulgated National Effluent Guidelines for storm water discharges from bulk storage petroleum facilities. In the absence of technology-based guidelines, DEM is authorized to use Best Professional Judgement (BPJ) to establish effluent limitations, in accordance with Section 402(a)(1) of the CWA.

Under Section 301 (b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Rhode Island Water Quality Standards include a narrative statement that prohibits the discharge of any pollutant or combination of pollutants in quantities that would be toxic or injurious to aquatic life. In addition, the State has adopted EPA's numerical criteria for specific toxic pollutants and toxicity criteria as published in the EPA Quality Criteria for Water, 1986, (EPA 440/5-86-001) as amended.

The effluent monitoring requirements have been specified in accordance with RIPDES regulations as well as 40 CFR 122.41 (j), 122.44 (i), and 122.48 to yield data representative of the discharge.

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.

BPJ-based Limits

Outfall 001: Effluent limitations for Outfall 001 have been established for total suspended solids (TSS) and oil and grease. The daily maximum effluent limitation of 20 mg/l for TSS is a BPJ based limit based on the ability of bulk petroleum storage terminals to comply with this numeric limit utilizing proper BMPs and using oil/water separators and/or holding/equalization basins as the storm water treatment technology. TSS has been limited to account for the potential for

petroleum hydrocarbons to adsorb or absorb to particulates and be transported with the suspended material. The daily maximum effluent limitation of 15 mg/l for oil and grease is a BPJ based limit based on American Petroleum Institute (API) oil/water separator guidelines. The draft permit limit for oil and grease remains unchanged from the previous permit at 15 mg/l, daily maximum. Performance data from terminals similar to this facility and from this facility, indicate that these effluent limits can be achieved through the proper operation of a correctly sized oil/water separator, appropriate source controls, routine inspections, preventative maintenance, good housekeeping programs, and effective best management practices (BMPs).

Outfall 001 must also be monitored for sixteen (16) polynuclear aromatic hydrocarbons (PAHs). These pollutants were chosen because they are indicators used to characterize contamination from the petroleum hydrocarbons stored at the site. The permit requires annual analysis of PAHs.

Flow: The treatment technology for storm water runoff employed by this bulk storage petroleum terminal is an oil/water separator. These devices use gravity to separate the lower density oils from water; resulting in an oil phase above the oil/water interface, and a heavier particulate (sludge) phase on the bottom of the oil/water separator. The oil/water separator installed at this facility has a design flow rate of 1,500 gpm or 2.16 MGD. To ensure proper operation of the installed oil/water separator such that the oil and/or particulate phases are not entrained to the waterway, DEM is requiring that the release of runoff from any diked area or holding basin shall be controlled so that this discharge alone or in combination with all other wastewaters does not exceed the design flow rate for the oil/water separator or cause violations of the effluent limitations specified in the permit. A separate control valve for the secondary containment area allows for the separate release of storm water from this area. In order to estimate flow, a timed sample volume will be taken during the 30 minute sampling period and the volume collected will be divided by the time interval, and then converted to MGD. The flow limit in the permit has been set equal to the design flow rate for the oil/water separator servicing Outfall 001 of 2.16 MGD.

Water Quality-based Limits

The narrative effluent limitations for pH are based on water quality criteria established in the State's Water Quality Regulations for Freshwater Receiving Waters. In accordance with 40 CFR Part 122.4(d)(1)(iii), it is only necessary to establish limits for those pollutants in the discharge which have the reasonable potential to cause or contribute to the exceedance of the instream criteria. With the exception of pH, all other pollutants that have water quality criterion were listed as not being present in the discharge (i.e., non-detect) on the permit application. Therefore, the only pollutant that requires a water quality-based limit is pH.

Hydrostatic Test Water: To ensure safe working conditions during maintenance work periods; storage vessels (welding, new tank floors, e.g.) and/or pipe networks are rigorously cleaned (e.g. "poly brushed", "squeegee pigged") and certified as being "gas free". The vessels and/or pipe networks are then hydrostatically tested after the maintenance work is completed. Thus, hydrostatic test water discharge should contain only minimal amounts of foreign matter and/or trace amounts of hydrocarbons. As a precaution, however, the hydrostatic test water shall go through the oil/water separator (effluent) in a controlled manner to prevent exceedance of the maximum design flow rate of the separator thereby reducing any potential carryover of oil into the receiving waters.

The permittee shall notify the Office of Water Resources at least twenty-four (24) hours prior to the commencement of any proposed hydrostatic-test water discharges. Prior to testing, the interior of the tank(s) and/or piping being tested shall be cleaned and certified to be free of petroleum product. There shall be no discharge of tank and/or pipe cleaning residual/debris to the oil/water separator.

The hydrostatic test water released from the tank(s), after treatment through the oil/water

separator, must satisfy all the effluent limitations and conditions of this permit as specified for outfall 001. The surface of the oil/water separator should be routinely observed to determine if there is any detectable increase in the separated oil layer to prevent inadvertent hydrocarbon release to the receiving water(s). A logbook shall be kept to document the start and end of each hydrostatic test, the total flow discharged and all monitoring data.

Should any RIPDES permit discharge parameter be exceeded, the hydrostatic test water transfer shall be halted immediately followed by notification to the DEM of the exceedence.

SWPPP: Pursuant to Section 304(e) of the CWA and 40 CFR§125.103(b), best management practices (BMPs) may be expressly incorporated into a permit on a case-by-case basis where necessary to carry out Section 402(a)(1) of the CWA. The facility stores and handles pollutants listed as toxic under Section 307(a)(1) of the CWA or pollutants listed as hazardous under Section 311 of the CWA and has ancillary operations which could result in significant amounts of these pollutants reaching Frenchtown Brook. These operations include one or more of the following items from which there is or could be site runoff: materials storage, materials processing and handling, blending operations, intra-facility transfers, and loading/unloading of product. To control these activities/operations, which could contribute pollutants to waters of the United States via storm water discharges, at this facility; the permit requires this facility to maintain a Storm Water Pollution Prevention Plan (SWPPP) containing BMPs appropriate for this specific facility. The BMPs should include processes, procedures, schedule of activities, prohibitions on practices, and other management practices that prevent or reduce the discharge of pollutants in storm water runoff.

Prohibited Discharges

Non-storm Water Discharges: This permit authorizes certain non-storm water discharges. These discharges include treated effluent from firefighting activities; fire hydrant flushings; hydrostatic test water; lawn watering; uncontaminated groundwater; springs; air conditioning condensate; potable waterline flushings; foundation or footing drains where flows are not contaminated with process materials, such as solvents, or contaminated by contact with soils, where spills or leaks of toxic or hazardous materials have occurred; and potable water sources which include vehicle, equipment, and surface wash down waters which do not have chemicals (such as solvents, soaps, emulsifiers, and/or detergents) added. To prevent hydrocarbon and/or particulate entrainment (carry-over) from the treatment system, the permittee shall not add chemicals, soaps, detergents, solvents, emulsifiers, etc. to any fresh water wash down collection and treatment system without prior approval by the DEM.

All other non-storm water discharges including fire protection foam, either in concentrate form or as foam diluted with water, are excluded from coverage under this permit. The DEM believes there is a significant potential for these types of discharges to be contaminated. Thus, the permittee is required to obtain a separate RIPDES permit for these non-storm water discharges or seek the necessary approval(s) from the appropriate local pretreatment authority to discharge to the sanitary sewer system.

Tank Bottom Water: The bottom of many petroleum product storage tanks may contain a layer of water that has separated from the stored petroleum product due to the density difference between the product and water. As this water coalesces and then settles to the bottom of the tank, it partitions (dissolves) PAHs from the petroleum product. Through this process, the water selectively extracts some of these hazardous substances and may become toxic. To avoid product contamination, terminal operators drain this water layer to prevent transfer with the product.

Whereas storm water contacts only those hydrocarbons spilled on the ground and then only for short periods of time; tank bottom water remains in intimate proximity with petroleum derivatives for prolonged periods of time, allowing the pollutants the necessary contact time to dissolve into

the aqueous phase. Storm water also is discharged from the terminal in a timely fashion to maintain maximum storage capacity within the diked areas at all times. This procedure also minimizes the contact time between petroleum product and storm water.

The DEM considers tank bottom water a "process wastewater", since it can partition soluble toxic materials from petroleum product with time. To protect the Frenchtown Brook from pollutants dissolved in tank bottom water, the DEM is prohibiting the permittee from discharging any tank bottom water alone or in combination with storm water or other wastewater directly from the facility. The facility is required by the permit to dispose of tank bottom water off-site by a licensed hazardous waste contractor.

Contaminated Groundwater: Infiltration/Inflow of contaminated groundwater into the storm water collection and treatment system is not authorized by this permit and must be addressed by the permittee pursuant to the Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases.

Antibacksliding

EPA's antibacksliding provision at 40 CFR §122.44(l) prohibit the relaxation of permit limits, standards, and conditions unless the circumstances on which previous permit was based have materially and substantially changed since the time the permit was issued.

The circumstances at the facility have not substantially changed since the issuance of the last RIPDES permit, and therefore the limits in the draft permit are no less stringent than what are in the previous permit. Therefore, since all of the permit limits are at least as stringent as those from the previous permit, this permit satisfies the antibacksliding provisions at 40 CFR §122.44(l).

Similarly, the RI DEM has determined that all permit limitations are consistent with the Rhode Island Antidegradation policy.

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. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to the Rhode Island Department of Environmental Management. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Director finds that response to this notice indicates significant public interest. 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.

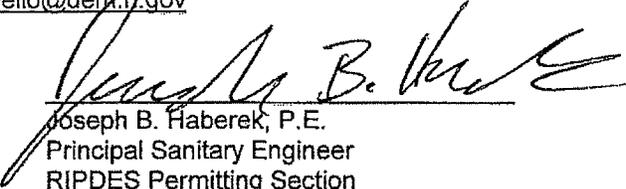
Following the close of the comment period, and after a public hearing, if such hearing is held, the Director will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within thirty (30) days following 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 Rule 49 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:

Aaron Mello
RIPDES Program
Office of Water Resources
Department of Environmental Management
235 Promenade Street
Providence, Rhode Island 02908
Telephone: (401) 222-6820 Ext.7405
Email: aaron.mello@dem.ti.gov

8/1/14
Date


Joseph B. Haberek, P.E.
Principal Sanitary Engineer
RIPDES Permitting Section
Office of Water Resources
Department of Environmental Management

ATTACHMENT A-1

DESCRIPTION OF DISCHARGES: Storm Water

DISCHARGE: 001A – Effluent from Oil/Water Separator (yard area outside the secondary containment area)

001B – Effluent from Oil/Water Separator (secondary containment area)

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE:

PARAMETER	<u>Outfall 001A</u> MAXIMUM¹	<u>Outfall 001B</u> MAXIMUM¹
FLOW (MGD)	<u>0.0070</u> MGD	<u>0.00063</u> MGD
Oil and Grease	<u>3.75</u> mg/l	<u>1.65</u> mg/l
TSS	<u>13.0</u> mg/l	<u>9.1</u> mg/l
Acenaphthene	<u>BDL</u> µg/l	
Acenaphthylene	<u>BDL</u> µg/l	
Anthracene	<u>BDL</u> µg/l	
Benzo (a) Anthracene	<u>BDL</u> µg/l	
Benzo (a) Pyrene	<u>BDL</u> µg/l	
Benzo (b) Fluoranthene	<u>BDL</u> µg/l	
Benzo (ghi) Perylene	<u>BDL</u> µg/l	
Benzo (k) Fluoranthene	<u>BDL</u> µg/l	
Chrysene	<u>BDL</u> µg/l	
Dibenzo (a,h) Anthracene	<u>BDL</u> µg/l	
Fluoranthene	<u>BDL</u> µg/l	
Fluorene	<u>BDL</u> µg/l	
Indeno (1,2,3-cd) Pyrene	<u>BDL</u> µg/l	
Naphthalene	<u>BDL</u> µg/l	
Phenanthrene	<u>BDL</u> µg/l	
Pyrene	<u>BDL</u> µg/l	
Sum of All (PAHs)	<u>BDL</u> µg/l	

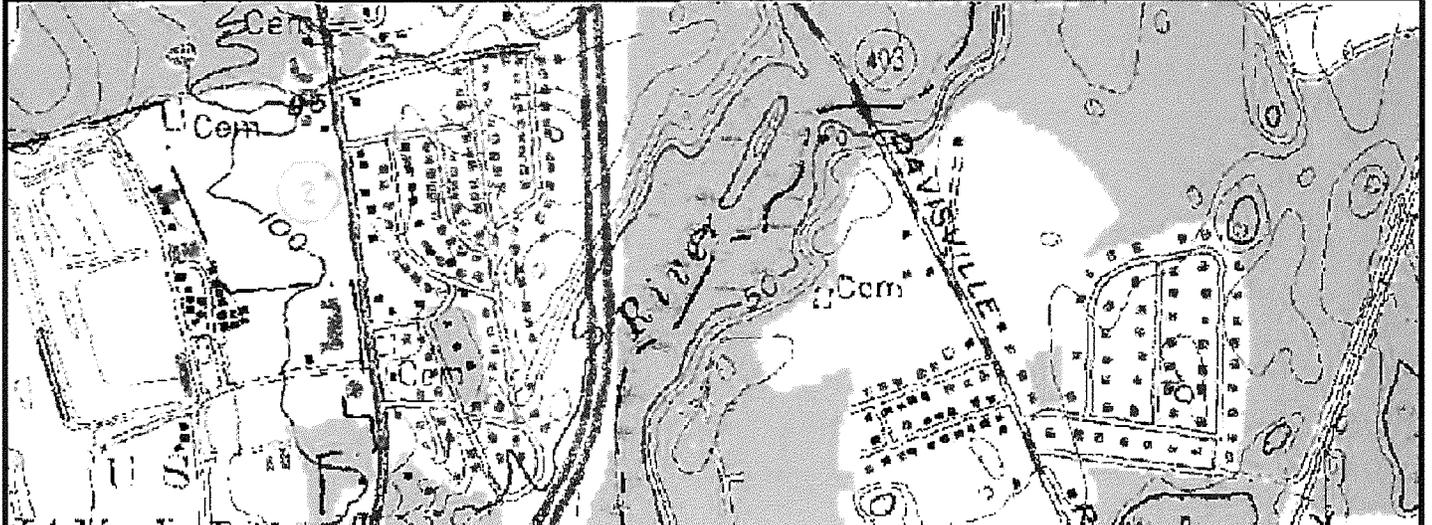
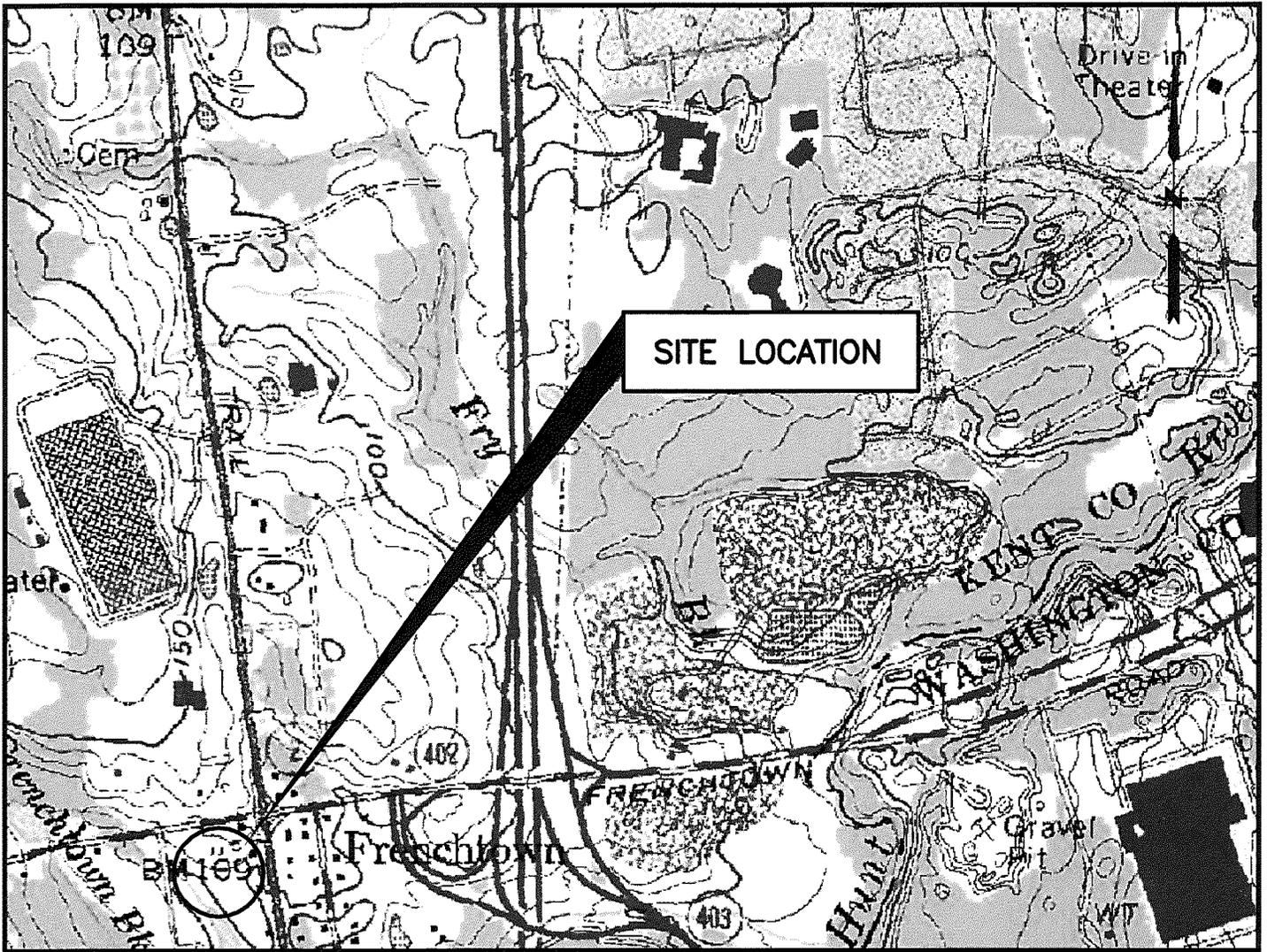
¹ Data represents the mean of the daily maximum data from January 2010 through December 2013.

BDL=Below Detection Limit

ATTACHMENT A-2

Petroleum Heat and Power Company, Inc. – 2579 S. County Trail, East Greenwich, RI

SITE LOCATION MAP



MAP REFERENCE:

THIS MAP WAS PREPARED FROM 7.5 MINUTE SERIES TOPOGRAPHIC MAPS QUADRANGLES (EAST GREENWICH, CROMPTON, WICKFORD, AND SLOCUM, RI.) PHOTOREVISED 1970 & 1975.

LUCS:WRLD IMS:VIEWMS2000 UMAN: CTB:FO_STANDARD:HALF

SCALE	HORZ: 1" = 1000'
	VERT: _____
DATUM	HORZ: _____
	VERT: _____
GRAPHIC SCALE	

WWW.FANDO.COM



FUSS & O'NEILL
Disciplines to Deliver

317 IRON HORSE WAY SUITE 204 PROVIDENCE RI 02908 401.861.3070

PETRO HOLDING INC.
SITE LOCATION MAP
STORM WATER POLLUTION PREVENTION PLAN

2579 S. COUNTY TRAIL
EAST GREENWICH, RI

PROJ. No.: 1992600A51
DATE: DECEMBER 2008

FIGURE 1

ATTACHMENT A-3

Petroleum Heat and Power Company, Inc. – 2579 S. County Trail, East Greenwich, RI

SITE PLAN

PART II
TABLE OF CONTENTS

GENERAL REQUIREMENTS

- (a) Duty to Comply
- (b) Duty to Reapply
- (c) Need to Halt or Reduce Not a Defense
- (d) Duty to Mitigate
- (e) Proper Operation and Maintenance
- (f) Permit Actions
- (g) Property Rights
- (h) Duty to Provide Information
- (i) Inspection and Entry
- (j) Monitoring and Records
- (k) Signatory Requirements
- (l) Reporting Requirements
- (m) Bypass
- (n) Upset
- (o) Change in Discharge
- (p) Removed Substances
- (q) Power Failures
- (r) Availability of Reports
- (s) State Laws
- (t) Other Laws
- (u) Severability
- (v) Reopener Clause
- (w) Confidentiality of Information
- (x) Best Management Practices
- (y) Right of Appeal

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 Rule 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 Rule 14.18 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 Rule 14.18 of the RIPDES Regulations; and
- (d) The permittee complied with any remedial measures required under Rule 14.05 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, 291 Promenade Street, Providence, Rhode Island. 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 Rules 15 and 23 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 Rule 49 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 ³ /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 ₃ -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 ₃ -N	nitrate nitrogen as nitrogen
NO ₂ -N	nitrite nitrogen as nitrogen
NO ₃ -NO ₂	combined nitrate and nitrite nitrogen as nitrogen
Cl ₂	total residual chlorine