# FACT SHEET

## Proposed Remediation General Permit Under the National Pollutant Discharge Elimination System (NPDES) for Discharges in Massachusetts and New Hampshire

The Director of the Office of Ecosystem Protection, EPA-New England (EPA-NE) is proposing to issue general permits for the consolidation of permit issuance for point source discharges related primarily to the discharge of groundwater and certain surface waters from activities listed in Table I below. The general permits cover discharges to certain waters in the Commonwealth of Massachusetts (MA), including both Commonwealth and Indian Country lands, and the State of New Hampshire (NH).

The following proposed Fact Sheet provides background information and explanation of the proposed Remediation General Permit (RGP). This document contains supporting information for Part I (Applicability and Conditions) and Part II (Standard Conditions) of the draft NPDES general permit as well as several Appendices. The final Fact Sheet will also include a summary of the comments received as a result of the public notice and EPA's response to the comments.

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## I. Background

### A. Expected Universe of Dischargers Covered by this Permit

From October 1993 to June 2004, there have been approximately 2,000 site remediation project discharges in MA and NH for the types of activities listed in Table I below. The average annual number of new applicants has remained relatively constant, ranging from about 180 to 250 per year. Over 200 of these projects have applications already filed with EPA for individual NPDES permits. In general, the types of discharges represented in Table I have never received NPDES permits from EPA-NE, which is the current permitting authority for the States of MA and NH. Additionally, EPA estimates that there are 150 other existing projects in MA and NH that are currently discharging pursuant to approved site remediation actions that have not yet submitted an NPDES application. EPA-NE is strongly encouraging existing and new applicants in the categories described in Table I to seek coverage under the RGP.

**Table I: Expected Universe of Dischargers Covered by this Permit**

| Activity Category | Activity Sub-Category |
|---|---|
| I - Petroleum Related Site Cleanups | A. Gasoline Only Sites<br>B. Fuel Oils and Other Oil Sites<br>C. Petroleum Sites Containing Other Contaminants |
| II - Non Petroleum Site Cleanups | A. VOC Only Sites<br>B. VOC Sites Containing Other Contaminants<br>C. Sites Containing Primarily Metals |
| III - Contaminated Construction Dewatering | A. General Urban Fill Sites<br>B. Known Contamination Sites |

| | |
|---|---|
| IV - Miscellaneous Related Discharges | A. Aquifer Pump Testing to Evaluate Formerly Contaminated Sites<br>B. Well Development/Rehabilitation at Contaminated/Formerly Contaminated Sites<br>C. Hydrostatic Testing of Pipelines and Tanks<br>D. Long Term Cleanup of Contaminated Non-residential Sumps and Dikes<br>E. Non-emergency Pump-out of Utility Vaults & Manholes<br>F. Short-term Contaminated Dredging Drain Back Waters (if not covered by 401/404 permit) |

EPA-NE will notify applicants with active discharges of the availability of this new general permit and the requirements necessary to be covered by the general permit. Unless the Director makes a determination that an individual permit is necessary, EPA-NE will encourage all new and outstanding NPDES permit applicants, eligible for coverage, to seek coverage under the general permit. Permittees with current NPDES permits which would otherwise be eligible for coverage under the general permit, may be transferred upon request and termination of their individual permit.

In Table II below, EPA-NE has evaluated the historic information available regarding the universe of activities to estimate the number of discharges in MA and NH which may be eligible for coverage under the RGP over its five year life. In establishing Table II below, EPA evaluated the past ten (10) years of data from approved site remediation and other projects. Owners/operators of existing discharge activities who qualify for coverage as of the effective date of this permit will constitute the initial universe of facilities. Table II provides a breakdown of the estimated universe of dischargers expected to be covered under this RGP during its initial five year effective period.

**Table II: Estimated Universe of Dischargers Under the RGP**

| DISCHARGE TYPE | APPROXIMATE NUMBER |
|---|---|
| 1. Long Term Petroleum Pump & Treat | 200 |
| 2. Long Term Non-Petroleum Pump &Treat | 75 |
| 3. Short Term Petroleum and Non-Petroleum Pump & Treat | 250 |
| 4. Contaminated Construction Dewatering | 250 |
| 5. Complex Site Remediation | 50 |
| 6. Hydrostatic Testing | 50 |
| 7. Miscellaneous (Pump Tests,Vaults, Sumps, etc.) | 200 |
| Total | 1,075 |

## B. Pollutants Associated with These Activities

Discharges from the activities listed in Tables I and II above typically contain common pollutants or groups of pollutants. EPA has evaluated the potential for such discharges based on many years of discharge monitoring reports from over 2,000 sites, as well as data from state NPDES permit programs, federal and state managed Superfund type programs, Underground Storage Tank (UST), and Drinking Water programs. Table I is organized by the types of pollutants needing control in the discharge to surface waters. The majority of the discharges covered by this permit are related to the management of groundwater that has been contaminated by human activities or in some instances from naturally occurring contaminants. Other discharges covered by this permit may include separate contaminated surface water and remediation-related runoff or mixed surface and ground water depending on the type of activity (e.g. construction sites, hydrostatic pipe tests, etc.).

Each of the categories listed in Tables I and II can usually be associated with "typical" pollutants or chemicals of concern (COCs) which need are addressed by the permit. Based on historical data, the most common sources and types of pollutants or COC's are shown in Table III. However, Table III is not a complete list of chemicals covered by the RGP. Section VI of this Fact Sheet, Effluent Limitations, contains a discussion of the complete list of the COCs covered by the RGP.

**Table III: Most Common Types of Sources and Pollutants Covered Under the RGP**

| Source | Pollutants |
|---|---|
| 1. Gasoline Leaks, Spills, & Discharges | Benzene, Toluene, & Ethylbenzene, Xylenes (BTEX), Naphthalene, Ethylene dibromide, Methyl-t-Butyl Ether (MtBE), tert-Butyl Alcohol, tert-Amyl Methyl Ether, Misc. Petroleum Hydrocarbons (TPH), Lead, Iron, Residual Chlorine[1] |
| 2. Fuel/Lube Oils Leaks, Spills, & Discharges | Acetone, Naphthalene, Polycyclic Aromatic Hydrocarbons (PAHs), Benzene, BTEX, Nickel, Chromium, Zinc, Iron, Miscellaneous Petroleum Hydrocarbons (TPH), Residual Chlorine[1] |
| 3. Industrial/Commercial Solvents Leaks and Spills | Chlorinated and non-Chlorinated Volatile Organic Compounds (VOC), Metals |
| 4. Industrial Wastes, Coal Ash | Metals, PAHs, Polychlorinated Biphenyls (PCBs) |
| 5. Naturally Occurring | Metals |

## C. Summary of Options for Controlling Pollutants

In developing this NPDES Remediation general permit, EPA-NE reviewed the broad spectrum of potential pollutants which are typically encountered at contaminated sites and the common technologies used to meet effluent requirements. The majority of discharges contain common groups of pollutants, such as total suspended solids (TSS), petroleum hydrocarbons and/or other volatile organic compounds (VOC's) or semi-volatile compounds (PAHs). Similarly, over the past 10 years, nearly all of the discharges pursuant to remediation projects in MA and NH have utilized off-the-shelf, economically viable, and proven treatment systems including: 1) phase separation, 2) sedimentation, 3) filtration, 4) air stripping and/or 5) carbon adsorption. Vapor phase carbon treatment is also typically utilized with air stripping for air emission control. For metals removal, typical controls include chemical addition, pH adjustment, and possibly ion exchange type units.

Some common pollutants are more difficult to treat due to their physical characteristics (including solubility, Henry's law constant, etc.). One example is Methyl-tert Butyl Ether (MtBE), the most common fuel oxygenate used in New England. To remove these, additional operation and maintenance (O&M) may be required. However, the operations data submitted to EPA-NE from the vast majority of dischargers using these systems,

[1] For hydrostatic testing particularly where municipal water is used.

indicates that very low effluent concentrations meeting current standards, are routinely achieved. The most common VOC compounds such as the Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) in petroleum hydrocarbon discharges and the chlorinated solvents such as Trichloroethylene (TCE) and Tetrachloroethylene (PCE) can typically be treated to below laboratory detection levels by these common technologies.

This permit establishes effluent limitations and the permittee must insure the application of best management practices (BMP's) to the overall activity to minimize the environmental impacts of the activity and the discharge to the environment. For certain discharges such as hydrostatic test discharges, this permit contains specific additional BMP's. However, EPA does not prescribe specific technologies required to meet the discharge requirements. The information provided here is meant to demonstrate that, in most instances, the contaminants found in these discharges can be successfully and economically managed. In instances where discharges include chemicals other than the COCs covered by this permit or where applicants encounter particularly difficult pollutant control situations, the owner/operator may need to submit an application for an individual NPDES permit.

## D. Role of the States of Massachusetts and New Hampshire

**1. 310 CMR 40.0000, Massachusetts Contingency Plan (MCP) and NPDES** - Based on historical information, the majority of activities expected to be covered by this Remediation permit are in MA. Within MA, the majority of discharges are as a result of cleanup activities being conducted under MA General Laws, Chapter 21E, and the MCP administered by the Department of Environmental Protection (DEP), Bureau of Waste Site Cleanup (BWSC). The MCP establishes the state "Superfund" procedures from notification of a release through final site cleanup and the filing of a Response Action Outcome.

Several important sections of the MCP regulations relate to the issuance of discharge permits and affect the usual procedures established between the EPA and MADEP for issuance of NPDES permits. Section 40.0042 of the MCP establishes the requirements for "Remedial Wastewater Discharges to Surface Water." Specifically 40.0042(1) requires an EPA issued NPDES permit or emergency exclusion. NOTE: EPA is the NPDES issuing authority in MA and until such time as the NPDES program is delegated to the State, Section 40.0042(2) provides an exemption from any state issued discharge permit to surface water.

In summary, any responsible party engaged in site cleanup activity in MA under the MCP and assigned a Release Tracking Number (RTN) is only required to receive coverage for surface water discharges under an EPA NPDES permit or permit exclusion. As described previously, this Remediation General Permit is intended to apply to the majority of discharges unless an individual permit is required. (See "http://www.state.ma.us/dep/bwsc" for additional information on the MADEP waste site

cleanup program)

For MCP cleanup site discharges expected to be covered by this general permit or an individual permit, the MADEP retains several primary functions including:
1) certification that the permit meets state promulgated water quality standards;
2) conduct of an anti-degradation review as needed under the state/EPA anti-degradation policy (see Section VIII.G.); 3) insuring compliance with the permit provisions of the MCP; and 4) general coordination and consultation on administrative and technical issues.

**2. Joint issuance of Non-MCP Site NPDES Permits in MA -** Under an Interagency Agreement established between the EPA and MADEP on March 18, 1973, NPDES permits are jointly issued by both agencies until such time as DEP is delegated the program. Several other general NPDES permits affecting the State of MA are jointly issued and administered by EPA and DEP. This new remediation general permit is also being jointly issued, however provision is made for the unique permit exemption granted by the MCP. Applicants will be required to identify themselves in the Notice of Intent (NOI) application form as being exempt or non-exempt from a state permit under the MCP. All non-exempt dischargers will be subject to the joint administration of this general permit and any additional state requirements (e.g., state application form, fees, etc.).

**3. NH Department of Environmental Services (NH DES), RSA 485-A:13,I, "Temporary Surface Water Discharge Permit"** - Under RSA 485-A:13, I, NHDES is authorized to issue temporary surface water point source discharge permits to Class B waters of the State. Discharges to Class A waters are not allowed unless allowed under Env-Ws 1708.05(b). The statute requires the applicant to file a form with NHDES to obtain this temporary permit. The state permit expires in four (4) months and is usually non-renewable. Currently, the state permit requires the owner/operator to apply for a full NPDES discharge permit from EPA if the discharge is to last longer than 4 months.

**4. Consideration of Specific State Standards in MA and NH -** Many of the discharges potentially covered by this general permit are the result of state underground storage tank and/or site remediation actions. In making permitting decisions at these sites, the States must consider a number of additional state requirements, including: state adopted surface water quality standards approved by EPA, groundwater standards, state specific Maximum Contaminant Levels (MCLs) for drinking water, state adopted site remediation standards for soil and water, and chemical specific limitations established where no other standard or water quality criteria has been adopted. Some of the state standards considered include: 1) 314 CMR 4.00, MA Surface Water Quality Standards, 2) 310 CMR 40.097(2), MA MCP groundwater and soil standards, 3) 314 CMR 6.00, MA Groundwater Quality Standards, 4) NH CHAPTER Env-Wm 1503.05(c) Ambient Groundwater Quality Standards, and 5) NH CHAPTER Env-Ws 1700 Surface Water Quality Regulations.

An important distinction exists, however, between the MA and NH adopted surface water standards. The State of NH has adopted numerical standards for freshwaters and marine waters for many of the priority pollutants for which EPA has not yet established final criteria. Earlier EPA criteria publications established only "Lowest Observed Effects Levels" or LOEL's for many pollutants. The MA surface water standards do not contain numerical standards, however they refer to EPA published criteria. Since many of the pollutants found at remediation sites have not yet had freshwater or marine water standards recommended by EPA, the distinction between the two States needed to be evaluated in establishing limitations for this permit.

Additionally, none of the three agencies (EPA, MA, or NH) have yet established a recommended surface water quality criteria for the common petroleum groundwater pollutant Methyl-tert-Butyl Ether (MtBE). The current state standard for MtBE in groundwater (and discharges to state waters) is 70.0 parts per billion(ppb) in MA and 13.0 ppb in NH. Additionally, NH has recommended a discharge standard for Tert-Butyl Alcohol (TBA) another gasoline oxygenate, of 1,000 ppb, while MA has not yet set a similar requirement.

Previously, EPA reviewed the various state requirements when establishing limits for site remediation projects and consulted with the States on specific cases where a standard was not available or a unique limit was being developed. Typically, EPA NE includes additional state requirements in NPDES permits to insure state certification of the permit, and in some instances, more stringent state requirements. Similarly, EPA considered State requirements in the development of this general permit.

## II. Organization of the Remediation General Permit (RGP)

Table of Contents of RGP:

E. Best Management Practices Plan (BMPP)

1. Development of a BMPP
2. Additional Best Management Practices
3. BMPs for Hydrostatic Testing
4. BMPP Deadlines

F. Special NPDES Permit Conditions

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Appendix I - Areas of Critical Concern in Massachusetts
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## III. Applicability and Coverage of the Remediation General Permit (RGP)

The following is a description of the specific activities intended to be covered by the general permit as well as a rationale for inclusion in this permit.

### A. Category I: Petroleum Related Site Remediation Activities

**1. Gasoline-Only Sites**: The general permit is designed to cover discharges resulting from the treatment of contaminated groundwater and remediation related wastewater where only gasoline was released. This includes short term dewatering for underground storage tank (UST) removal or replacement, long term groundwater pump and treat systems, or other activities where gasoline is the only known contaminant. This also includes releases which may contain leaded gasoline.

**2. Fuel Oils and Other Oil Sites**: The general permit is designed to cover discharges resulting from treatment of contaminated groundwater and remediation related wastewater where there has been a release of fuel oils such as kerosene, diesel fuel, jet fuel, #2 heating oil, and heavier residual fuel oils, and from other oils such as lube oils, machine oils, hydraulic fluids, mineral oils, and others products, with the exception of waste oil. This includes short term dewatering for underground storage tank (UST) removal or replacement, long term groundwater pump and treat systems, or other activities where oil is the only known contaminant.

**3. Mixed Contaminant Petroleum Sites and Waste Oil Sites:** The general permit is designed to cover discharges resulting from treatment of contaminated groundwater and remediation related wastewater where the releases are primarily petroleum contaminants from mixed wastes. Typically, these are sites where petroleum product releases have been identified as the primary source, however, other contaminants have also been found at the site. These other contaminants often include waste solvents, heavy metals from industrial processes such as electroplating, or waste oils which may be co-mingled with other contaminants including polychlorinated biphenyls (PCB's).

### B. Category II: Non-Petroleum Site Remediation Activities

**1. Volatile Organic Compound (VOC) Sites**: The general permit is designed to cover discharges resulting from treatment of contaminated groundwater and remediation related wastewater where a release of VOC compounds is the primary source of contamination. These releases are typically related to improper disposal or spills of solvents, de-greasers, cleaners, paint removers, etc., or from industrial operations, chemical blending, transportation, or other sources.

**2. Primarily VOC Sites Containing Other Contaminants:** The general permit is designed to cover discharges resulting from treatment of contaminated groundwater and remediation related wastewater where site characterization has identified VOC

compounds as the primary source of contamination along with other contaminants in small amounts. For example, VOC contaminated sites might have minor amounts of petroleum hydrocarbons, metals, or other pollutants.

**3. Primarily Heavy Metals Sites**: The general permit is designed to cover discharges resulting from treatment of contaminated groundwater and remediation related wastewater where release of heavy metals has been identified as the primary source of contamination. For example, a sludge lagoon from a former metal plating shop may contain small amounts of other contaminants, however, the treatment process and discharge limitations are driven by the heavy metals present.

## C. Category III: Contaminated Construction Site Dewatering

**1. Specific Contamination Sites:** The general permit is designed to cover discharges resulting from treatment of contaminated groundwater and remediation related wastewater at known contaminated construction dewatering activities, other than UST removal or replacement (as discussed above). For example, where dewatering activities are undertaken in an area of known contamination or the contamination has been discovered as a result of the construction activity, e.g., where the water has a perceptible odor, color, sheen, or there is data from sampling. Sites may be listed on an EPA or state inventory of known releases, for example, a "Brownfields" site. These activities and resulting discharges are separate and distinct from discharges at the same or separate sites which may be covered under EPA-NE's General Permit for Construction Dewatering or EPA's national Construction General Permit (Phase I & II), which are designed primarily for uncontaminated sites.

The RGP is designed to cover sites/facilities where there are contaminants in such concentrations that the discharge would need prior treatment in order to meet the limits it sets out. Dischargers with certain types of contamination, e.g., construction activities where only suspended solids and oil and grease are present in the discharge, might be eligible for coverage under one of the two construction permits referenced above. In the Notice of Intent (NOI) form, the applicant must indicate whether the site is covered by any other permit. Applicants should familiarize themselves with these other permits and if questions remain, should contact the state agency or EPA contacts listed in the permits and application information.

**2. Sites Contaminated by "Urban Fill" or Non-Specific Contamination:** The RGP is meant to cover discharges resulting from treatment of contaminated groundwater and remediation related wastewater where construction dewatering activities are taking place. It is designed for locations where sub-surface site investigations and/or soil characterization for disposal has revealed various common pollutants typically associated with past industrialization, power generation, incineration, or other activity and where no specific source of contamination is apparent. These sites typically may contain moderate concentrations of metals, polynuclear aromatic hydrocarbons (PAH's), or PCB's that

require treatment prior to discharge.

## D. Category IV: Miscellaneous Discharges

**1. Aquifer Pump Testing:** The general permit is designed to cover discharges of treated water from short or long term groundwater pumping from discrete aquifers conducted to evaluate remedial actions at known contamination sites.

**2. Well Development and Rehabilitation:** The general permit is designed to cover discharges of treated water from the development or rehabilitation of monitoring wells at contaminated or formerly contaminated sites. For example, the permit could cover wells being evaluated for possible return to service after site remediation. The permit is not meant to cover, however, wastewater from wells that contain only naturally occurring substances or materials from the routine maintenance of the wells.

**3. Hydrostatic Testing:** The general permit is designed to cover discharges from the hydrostatic (water) testing of pipelines, tanks, and other liquid or gas storage structures. These discharges often consist of high volume rates of flow over short periods of time. At a minimum, the permit requires application of Best Management Practices (BMP's), such as pre-cleaning of the structures before the hydrostatic test. In fact, this permit is designed for tanks and pipelines where thorough pre-cleaning has occurred. Although this RGP is primarily intended for management of groundwaters and remediation related runoff, EPA-NE has decided to include hydrostatic test discharges in the RGP due to the nature of the contaminants, the relative infrequent number of applications received (approx. 10/yr.), and the intermittent, temporary discharges involved.

Discharges may result from construction of new facilities or repairs to existing facilities. Historically, the majority of applicants for hydrostatic test discharge permits in EPA-NEI are related to natural gas and petroleum operations including: pipelines, large storage tanks, and other incidental structures, typically at oil terminals and power plants. Due to the large volumes of water required, surface water supplies are utilized in most cases.

**4. Contaminated Sump Discharges:** Over the past ten years, EPA-NE, NPDES program has received numerous inquiries regarding the appropriate permit mechanism for discharges from sumps or other structures utilized for collecting miscellaneous sources of water. Usually the collected waters are known or suspected to contain contaminants from leaching of contaminated groundwaters or stormwaters into the collection structure. These discharges are rarely part of site remediation projects.

It is not the intent of the EPA-NE in this RGP to capture all sump type discharges which can best be managed at the local level through municipal collections systems and pollution prevention plans. In fact, residential dwelling sumps are not covered by this permit. Additionally, this permit only covers discharges which contain levels of contamination *requiring ongoing treatment*. For example, an underground parking

garage situated below the water table where the groundwater is known to be contaminated from a past release and requires ongoing collection, treatment, and discharge of leached water to avoid flooding in the structure.

**5. Utility Vaults and Manholes:** EPA-NE has received a number of applications for permit determinations for the discharge of contaminated water from the routine and/or emergency pump-out of utility vaults and manholes. These structures typically serve as junction points for buried electric, telephone and TV cables. Some vaults and other underground structures placed below the local water table collect leached groundwater and incidental storm water. Some of these structures are located in areas of known groundwater contamination which may leach into the vaults.

This RGP is intended to cover *non-emergency* (> 24hr notice) planned discharges of contaminated water that has been treated by a mobile treatment unit and then discharged to a local separate storm sewer or directly to surface water. Repairs or routine maintenance can require de-watering of manholes or other structures for extended periods (several days to several weeks). The permit allows coverage under one NOI of multiple discharges which are owned or operated by the same utility within the same geographic area of known or suspected contamination.

**6. Short Term Testing and Pilot Studies for Contaminated Condensates from Dredging Projects**: The general permit is designed to cover rare discharges where there is a need to discharge treated water as part of a short term pilot study or other activity associated with contaminated dredge drain back waters. Furthermore, this permit would only be used where the US Army Corps of Engineers (USACOE) does not intend to issue a formal permit under Section 404 of the CWA for the short term study activity.

## IV. Limitations on Coverage of the Remediation General Permit by the Draft RGP

### A. Specific Discharges Excluded From Coverage

The following discharges are excluded from coverage under this RGP:

a. Discharges to Outstanding Resource Waters in Massachusetts as defined by 314 CMR 4.06(3) including Public Water Supplies (314 CMR 4.06(1)(d)1.) which have been designated by the State as Class A waters, unless a variance is granted by MADEP under 314 CMR 4.04(3)(b).

b. Discharges to Outstanding Resource Waters in New Hampshire as designated by RSA 483:7-a, unless allowed under Env-Ws 1708.05(b).

c. Discharges to Areas of Critical Environmental Concern (ACEC) in MA as defined by the Massachusetts Wetlands Protection Act c.131, Section 40, unless a variance as allowed in the water quality standards is granted by the State. See Appendix I of the

RGP for a listing of ACEC's by city and town.

d. Discharges to Class A waters in New Hampshire in accordance with RSA 485-A:8, I. and Env-Ws 1708.06.

e. Discharges to designated areas under the Endangered Species Act unless the requirements specified in this permit are fulfilled. See Sections V.B and Appendices II and VII of the RGP for additional ESA requirements.

f. Discharges to designated areas under the Essential Fish Habitat Act (EFH) unless the requirements specified in this permit are fulfilled.

g. Discharges that contain pollutants which are specifically included in the states' published 303(d) lists of "non-attainment" segments of receiving waters in the Commonwealth of Massachusetts and the State of New Hampshire, as defined by the CWA and approved by EPA, unless the discharge is at or below a concentration that meets water quality standards. In other words, coverage under the general permit would be allowed if the site did not have any of the contaminant for which the segment was not attaining the water quality standard. For example, coverage would be allowed if a segment was not attaining due to excessive nutrients (e.g., ammonia), which are not expected in the discharges covered by this permit. Similarly, the discharge would be allowed if the discharge contained the contaminants for which a segment was non-attainment (e.g., metals) but met the limits described in the general permit for those contaminants.

h. Discharges to a Publicly Owned Treatment Works (POTW) which are permitted under Section 402 of the CWA (NPDES). Discharge to municipal separate storm sewers (MS4s) is authorized by this permit but may require local permitting or approval under the municipality's Storm Water Pollution Prevention Plan (SWPPP) required under EPA's Phase I permits and EPA's Phase II MS4 general permit.

i. Discharges directly or indirectly to the ground.

j. Discharge of dredge drain back waters covered by CWA Section 401 and 404 and 40 CFR Section 330.5(a)(16) administered by the US Army Corps of Engineers (USACOE). *NOTE: Short term discharges (e.g. pilot testing or other studies requiring discharge) may be covered under the RGP permit providing the USACOE does not intend to permit the discharge.*

k. Discharges of water supply, well development, or well rehabilitation waste waters except discharges of treated water from the development or rehabilitation of monitoring wells at contaminated sites or from the rehabilitation of wells previously taken out of service due to contamination which have since been remediated. This permit is not intended to cover water supplies or well discharges where contamination is the result of

routine maintenance or natural causes. Note that in New Hampshire, such activities may also need a groundwater permit.

l. Discharge of water from one water body to another water body, otherwise referred to as "water transfers," except for the specific purpose of hydrostatic testing of pipelines, tanks and other structures.

m. Uncontaminated construction dewatering discharges eligible for coverage under EPA-NE's General Permit for Construction Dewatering dated September 23, 2002, and authorized non-stormwater discharges under the EPA Construction General Permit dated July 1, 2003.

n. Short term discharges from sumps or other similar water collection structures, e.g., at residential and commercial properties, except as described above. These discharges may, however, be subject to local requirements under EPA's Phase I and II Municipal Separate Storm Sewer (MS4) general permits.

o. New Source dischargers, as defined in 40 CFR § 122.2.

p. Discharges listed in an individual NPDES permit unless the permit has expired or has been terminated by EPA. Facilities with an individual permit may apply for coverage under the RGP for existing discharges that are separate and distinct from currently permitted discharges at the facility in lieu of a modification request or upon permit expiration. Similarly, they may apply to the RGP for new discharges where appropriate (e.g., an industry where the primary process waste discharge is covered by an individual permit but the facility is conducting groundwater remediation with separate treatment and discharge).

q. Discharges for which the Director makes a determination that an individual permit is required under 40 CFR Section 122.28(b)(3).

r. Discharges of any commercial or industrial wastes to Ocean Sanctuaries in Massachusetts, as defined at 302 CMR 5.00.

s. Discharges to territorial seas, as defined by Section 502 of the Clean Water Act.

## V. Application Requirements and Notice of Intent

### A. Notice prior to discharge

**1. Notice of Intent (NOI)** - General permits require the submission of a Notice of Intent (NOI) prior to the authorization of such discharges (see 40 CFR Section 122.28(b)(2)(i)). Appendix V of the RGP contains suggested NOI form and instructions for including the information necessary for owners and operators to request coverage under the RGP. The

suggested format in Appendix V of the RGP is simplified to the extent possible and requires significantly less paperwork than the submission of an individual NPDES permit application.

The NOI can be submitted as either the suggested NOI application form in Appendix V of the permit or another official correspondence, such as NPDES Forms 1 & 2C. To be considered complete, the NOI must contain all of the information required by the NOI Instructions in Appendix V. The content of the NOI is contained in 40 CFR Section 122.28(b)(2)(ii), including certain minimum required information as well as information EPA needs to authorize coverage under the appropriate permit. In summary, the NOI for the RGP consists of:

1) General facility/site information;
2) Discharge information;
3) Contaminant information;
4) Treatment system information;
5) Receiving water information;
6) Results of consultation with federal services;
7) Supplemental information; and
8) Signature requirements.

Coverage under the general permit will not be effective until EPA-NE has reviewed the certification and existing file information, made a determination in consultation with MA DEP and NH DES that coverage under the RGP is appropriate, and then notified the owner/operator in writing of the determination. EPA-NE will post all NOIs on its NPDES website for at least 7 days prior to making its determination. The effective date of coverage will be the date of signature of the EPA notification letter by the Director.

a. <u>New Dischargers</u>:

All new dischargers seeking coverage under the RGP must submit a NOI to be covered by the RGP to EPA-NE at least **14 days** prior to the commencement of discharge. In many cases, the site cleanups and other activities which require a discharge permit are planned months or years prior to the need to discharge. EPA strongly recommends that applicants fill out and submit the NOI as early in the project planning process as possible. EPA and the States must have adequate notice to review the information submitted and make a determination of coverage or need for an individual permit, or to seek additional information from the applicant. If additional sampling or other data is required, the lead time for collection of this information can delay a project unless adequate lead time is planned for by the applicants. Based on EPA-NE's experience with over 2,000 site remediation projects since the early 1990's, EPA has determined that under ordinary circumstances, it is reasonable for applicants to apply for coverage at least 14 days prior to the desired date of discharge.

EPA-NE recognizes that during the 14 day NOI processing period, unplanned circumstances may arise that could necessitate a discharge. In such cases, EPA-NE will make an attempt to notify the applicant as soon as possible after the seven day NOI posting period of the Director's decision regarding coverage under the permit. Further, EPA-NE understands that some remediation activities are part of a response to an environmental emergency. In the case of emergencies, e.g., for the clean up of oil spills, EPA-NE's Office of Site Remediation and Restoration (OSRR) will have the lead on all requests for emergency NPDES exclusions as provided by 40 CFR Section 122.3(d) and 40 CFR Part 300. In cases of emergency spills, applicants should contact EPA at: National Response Center (NRC) (800-424-8802) or EPA-NE at: 617-918-1224 or 1236.

b. Current Discharge Activities With Existing Applications for Individual NPDES Permits:

There are a number of discharges in Massachusetts and New Hampshire that are currently occurring at approved site remediation projects. Historically, a number of those discharge activities operating in excess of 120 days were required to submit applications for individual NPDES permits. Over the past decade, EPA has received over 100 applications from such facilities. These applications were generally assigned a NPDES permit number and were sent an "application complete" letter. However, most facilities have never received a permit.

EPA-NE has attempted to identify all of the in-house applications which still have active discharges. EPA is strongly encouraging those facilities to seek coverage under the RGP upon its becoming effective. These facilities will receive a letter from EPA-NE regarding the availability of the new general permit. The letter will also request that the applicant indicate whether they wish to be covered by the new RGP or remain as an applicant for an individual permit. Additionally, the letter will request completion of a one-time certification as to type of permit coverage desired and whether the information contained in the previously submitted application for an individual permit is still accurate.

The applicants will be asked to fill out and submit the certification form within **30 days** of the effective date of the final RGP. If the applicants have made significant changes to their operations or discharges since the filing of the previous application, they must submit an updated application or NOI to EPA-NE within **30 days** of the effective date of the permit. In cases where the discharge activities has been terminated, the applicant may submit a Notice of Termination (NOT) of discharge during the time periods allowed for filing a certification in lieu of an NOI or updated application form.

If only minor administrative or technical changes to the existing application are necessary, a signed certification from the applicant will constitute the NOI for facilities wishing to transfer to the new RGP. Applicants must also submit a brief attachment describing all minor changes to the discharge covered by the submitted application.

Minor changes include: changes to administrative information, changes to the treatment system that improve performance or decrease flow, increases in flow of 25% or less, changes to the discharge location on the same receiving water, and other changes that do not negatively affect the characteristics of the discharge.

Owners or operators who have made significant changes to their operations or discharges since submission of the Form 1 & 2C application, must file a new NOI for coverage under the RGP or should file an addendum to the prior application if they wish to receive an individual permit. Significant changes include: discharges containing chemicals not reported in the original application, additional discharge locations, discharges to different receiving waters, changes of flow of greater than 25%, and any other change that would negatively affect the characteristics of the discharge.

Coverage under the RGP will not be effective until EPA-NE has reviewed the certification and application information, made a determination that coverage under the RGP is appropriate, and notified the owner/operator in writing of this determination. The effective date of coverage will be the date of signature of the notification letter by the Director. If the applicant is currently operating an approved site remediation project, the discharge will continue to be covered until the applicant receives written notification of permit coverage from EPA.

c. Existing Discharge Activities Which Have Not Submitted an Individual Permit Application:

As described previously, there are a number of discharges in Massachusetts and New Hampshire that are currently operating approved site remediation projects. However, a number of those dischargers have not yet filed an application for a NPDES permit. Owners with approved site remediation projects must now submit either a Notice of Intent (NOI), to be covered under the RGP, or application Forms 1 & 2C for coverage under an individual NPDES permit. EPA-NE is strongly encouraging all eligible dischargers to seek coverage under the RGP.

The NOI or application for an individual permit (Froms 1 and 2C) must be submitted to EPA-NE within **30 days** of the effective date of the final RGP. If the NOI or individual permit application is not postmarked within 30 days of the effective date of the final RGP, the facility will be deemed to be discharging without a permit and may be subject to immediate enforcement action.

Coverage under the RGP will not be effective until EPA-NE has reviewed the certification and existing file information, made a determination that coverage under the RGP is appropriate, and notified the owner/operator in writing of this determination. The effective date of coverage will be the date of signature of the notification letter by the Director. If the applicant is currently operating pursuant to an approved site remediation project, the discharge will continue to be covered until the applicant receives written

notification of permit coverage from EPA.

The following table summarizes the NPDES application options and deadlines for eligible sites/facilities currently without NPDES permits:

**Table IV: Summary of NOI and Certification Requirements**

| Type of Site/Facility | Application Options (choose one) | Deadlines |
|---|---|---|
| 1. Existing Discharge With Complete Application for an Individual NPDES Permit at EPA | a. Certify that previous application is still accurate and choosing coverage under RGP[2]. | **30 days** from final permit effective date |
| | b. Certify that previous application is still accurate and choosing coverage under an individual NPDES permit. | |
| | c. Certify that previous application is no longer accurate and submit NOI for coverage under RGP. | |
| | d. Certify that previous application is no longer accurate and update & submit NPDES application Forms 1 & 2C for coverage under an individual NPDES permit. | |
| 2. Existing Discharge Without a Complete Individual NPDES Permit Application at EPA | a. Submit NOI for coverage under the RGP. | **30 days** from final permit effective date |
| | b. Submit NPDES application Forms 1 & 2C for coverage under an individual NPDES permit. | |
| 3. New Dischargers | a. Submit NOI for coverage under the RGP. | a. **14 days** prior to discharge |
| | b. Submit NPDES application Forms 1 & 2C for coverage under an individual NPDES permit. | b. **180 days** prior to discharge |
| 4. Terminated Discharges | a. Submit certification indicating project completion. | **30 days** from final permit effective date |
| | b. Submit NOT or certification form indicating project completion. | |

d. Discharges Eligible for Coverage Under this Permit Previously Covered by an Individual Permit

In certain instances individual permits have previously been issued to facilities in MA and NH which otherwise would be eligible for coverage under this general permit. For any facilities with final permits for which this general permit is more appropriate, EPA-NE is encouraging the transfer of those permits to the new general permit at expiration or voluntary termination of the existing permit with the following limitations:

[2] The signed certification form (attached) may substitute for an NOI for any facility choosing to be covered by the new RGP provided that only minor administrative or technical changes have been made since the initial submission of the application and a description of those changes are included with the certification.

1) The Director has not determined that an individual permit is required.
2) There is no conflict with the anti-backsliding provisions of the CWA, (Section 303(d)(4); Section 402(c); 40 CFR Section 122.44(l)) which requires a re-issued permit to be as stringent as the previous permit with some exceptions.
3) The facility has not requested to be excluded from coverage under this general permit by re-applying for an individual permit (see 40 CFR Section 122.28(b)(4)(iii)).

**2. Filing with the State of New Hampshire, Commonwealth of Massachusetts, and Others** - A copy of the NOI form filed with EPA-NE must also be filed with the appropriate state agencies as directed in the NOI instructions in Appendix V of the RGP. The State agency may elect to develop a state specific form or other information requirements. Applicants must also comply with any other state provisions as required.

Applicants should also submit a copy of the NOI to the municipality in which the proposed discharge would be located. Additionally, operators who are utilizing a non-municipal storm sewer system at a facility covered by the EPA multi-sector storm water general permit for industrial activities must comply with any SWPPP developed under that permit. In many cases, the owner of the facility covered by the multi-sector permit and by this RGP may be the same. However, in the case of separate ownership and/or different operators, the owner/operator of the facility covered by the RGP is required to notify the facility covered by the multi-sector permit.

## B. Endangered Species

The Endangered Species Act (ESA) of 1973 requires Federal Agencies such as EPA to ensure, in consultation with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) (also known collectively as "the Services"), that any actions authorized, funded, or carried out by the EPA (e.g., EPA issued NPDES permits authorizing discharges to waters of the United States) are not likely to jeopardize the continued existence of any Federally-listed endangered or threatened species or adversely modify or destroy critical habitat of such species (see 16 U.S.C. 1536(a)(2), 50 CFR Section 402 and 40 CFR Section 122.49(c)).

This permit contains conditions designed to protect human health and the environment including endangered species and critical habitat.[3] The permit also insures the attainment and maintenance of state water quality standards, including those that have been subject to Section 7 consultation with the Services. In most cases, the discharges being regulated under this permit are the result of cleanup of past releases of toxic or hazardous materials to the environment, typically those that have been released or leached into the groundwater. While EPA supports the cleanup of these releases, the EPA does not want

[3] There is currently only one area federally-designated as critical habitat in MA, i.e., for the Northern Redbelly Cooter in Plymouth County, MA, and none in NH.

waters containing toxic amounts of materials simply transferred from one location (groundwater) to another (surface water).

As such, the permit contains very stringent effluent limitations which require a high degree of treatment for most pollutants which has been demonstrated to be both technologically and economically achievable as well as reliable. Numeric limitations and other permit conditions are designed to protect the most sensitive species in the receiving water. Additionally, for certain discharges, additional aquatic toxicity testing may be required using the Whole Effluent Toxicity (WET) test procedures to provide an overall assurance that the discharge will not cause toxicity in the receiving waters.

**1. Consultation** - Section 7 of the ESA provides for formal and informal consultation with the Services. For NPDES permits issued in MA and NH where EPA is the permit issuing Agency, draft NPDES permits and Fact Sheets are routinely submitted to the Services for informal consultation prior to issuance. This draft permit and accompanying Fact Sheet have been transmitted to the Services by letter on August 25, 2004, to initiate the consultation process. Based on working experience with the Services on numerous prior permits and identification of certain endangered species, general geographic areas of concern in the States and the potentially affected waters, including critical habitats, EPA has prepared this draft permit to insure adequate protection under the ESA.

In addition to the consultation being requested by EPA for the issuance of this permit, an optional type of informal consultation consists of the designation of a non-Federal representative (NFR) to determine whether a Federal action is likely to have an adverse impact on listed species or critical habitat. The ESA regulations provide for permit applicants, where designated, to carry out informal consultations as an NFR, which enables them to work directly with the Services (See 50 CFR Section 402.08). EPA is hereby designating applicants for this general discharge permit as NFR's for the purposes of carrying out informal consultation. Therefore, EPA expects that the applicants will contact the Services when consultation is needed. See Appendix VII of the RGP for additional guidance on consultation.

Proposed discharges that are located in areas in which listed endangered or threatened species may be present, are not automatically covered under this permit. The following paragraphs identify a number of locations where endangered or threatened species have been identified. Applicants with planned discharges to those locations should contact the Services. In addition to the areas listed in the paragraphs below, permittees should also refer to the species/county list in Appendix II of the RGP to determine whether or not additional consultation with the Services is needed.

Discharges into the following areas may affect the federally-listed endangered **dwarf wedge mussel** (Alasmidonta heterodon), including:

in Massachusetts, in the Fort River in Amherst (Hampshire County); the Mill River Diversion 1 - 2 miles in Northampton (Hampshire County); as well as a different Mill River, approximately 5 miles in Whately and Hatfield (Franklin County); and

in New Hampshire, the Ashuelot River from below the Surry Mountain Flood Control Project in Surry, to West Swanzey (Cheshire County); the South Branch of the Ashuelot River in Swanzey (Cheshire County); the Connecticut River from Northumberland to Dalton (Coos County); and approximately 18 miles south from Lebanon to North Walpole (Grafton and Sullivan Counties).

Discharges into areas that may affect the threatened **bog turtle** (Clemmys muhlenbergii), including: bodies of water in the Towns of Egremont and Sheffield (Berkshire County), Massachusetts.

Discharges into areas that may affect the **northern redbelly cooter** (Pseudemys rubriventris), including bodies of water occurring within the following boundaries: in the Towns of Plymouth and Carver, (Plymouth County) Massachusetts, west of Route 3 and north of Route 25; east of Route 58 and south of Route 44.

Similarly, the National Marine Fisheries Service has requested that it review and comment on all proposed discharges that may adversely affect the federally-listed endangered **shortnose sturgeon** (Acipenser brevirostrum). Discharges into certain sections of the Merrimack and Connecticut Rivers in both States may affect the federally-listed endangered shortnose sturgeon, including:
in the Merrimack River, from the mouth to Lawrence, Massachusetts (Essex County); and in the Connecticut River, from the Massachusetts border with Connecticut to Turners Falls, Massachusetts (Hampshire, Hampden, and Franklin Counties). in certain sections of the Merrimack and Connecticut Rivers in Massachusetts, including:

When discharge activities would occur along these listed waterways, permit coverage is not automatic. Rather, permit coverage is available only if the permit applicant contacts the Services to determine:
1) if listed species are present in the vicinity of the project area and
2) whether the applicant's discharges and discharge related activities are likely to affect listed species and/or critical habitats.
Coverage under the general permit is available only if the applicant consults with the Services under Section 7 of the Endangered Species Act, and it is determined that the applicant's discharges will not affect listed species, or the consultation results in a written concurrence by the Service(s) on a finding that the applicant's discharges are not likely to affect adversely listed species.

Applicants with discharges that would occur along or into the waterways subject to consultation requirements must conduct informal consultation with the Services as a non-Federal representative and must notify both EPA-New England and the appropriate state office of the determination in writing. The applicant must indicate in the space provided on the Notice of Intent (NOI) form used for applying for coverage (see Appendix V of the RGP) that consultation is required and that they are eligible for coverage, and must submit a copy of any determination from the Services with the NOI as directed. Applicants who cannot certify compliance with the ESA requirements on the NOI form, must contact the EPA NPDES Unit to determine if eligibility for an individual NPDES permit is possible or to discuss possible other options for the proposed discharge.

**2. Contact Information for FWS and NMFS:**

US Fish and Wildlife Service
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
Tel. No. (603) 223-2541

National Marine Fisheries Service
Northeast Region
One Blackburn Drive
Gloucester, MA 01930-2298
Tel. No. (978) 281-9112

## C. Essential Fish Habitat

**1. Background**

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. Sections 1801 et seq. (1996)), EPA is required to consult with the National Marine Fisheries Service (NMFS) if EPA's action or proposed actions that it funds, permits or undertakes, "may adversely impact any essential fish habitat." See 16 U.S.C. Section 1855(b). The Amendments broadly define "essential fish habitat" (EFH) as "waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." See 16 U.S.C. Section 1802(10). Adverse impact means any impact which reduces the quality and-or quantity of essential fish habitat (see 50 CFR Section 600.910(a)). Adverse effects may include direct (e.g. contamination or physical disruption), indirect (e.g., loss of prey, reduction in fecundity), site-specific or habitat-wide impacts, including individual, cumulative or synergistic consequences of actions. An EFH designation is only available where a Federal Fisheries Management Plan exists (see 16 U.S.C. Section 1855(b)(1)(A). EFH designations for New England were approved by the US Department of Commerce on March 3, 1999. In a letter to EPA-New England dated October 10, 2000, NMFS agreed that for NPDES

permit actions, EFH notification for purposes of consultation can be accomplished in the EFH Section of the permit Fact Sheet or Federal Register Notice.

**2. Proposed Action**

EPA is proposing to issue general permits for point source discharges related primarily to the discharge of groundwater and related surface waters from four general categories of activities:
1) site remediation primarily related to petroleum contamination; 2) site remediation activities where petroleum is not the primary contaminant; 3) contaminated construction site dewatering; and 4) miscellaneous contaminated discharges. The specific activities are described in Table I in Section I.A above. The general permits cover discharges to waters in the Commonwealth of Massachusetts (MA), including both Commonwealth and Indian Country lands, and the State of New Hampshire (NH).

**3. Resources**

The general permit is not available to any new or increased discharge into territorial seas (as defined by Section 502 of the Clean Water Act), however, it does not specifically exclude discharges into tidal waters. Therefore, our EFH assessment considers all federally managed species with designated EFH in the coastal and inland waters of Massachusetts and New Hampshire. See the following website for list of species: http://www.nero.noaa.gov/hcd/webintro.html.

**4. Analysis of Effects**

As described in Section I.A, the Remediation General Permit covers a variety of potential discharges which could occur anywhere in Massachusetts and New Hampshire, except into territorial seas as noted above. Based on EPA-NE's experience with site remediation projects in the two States, many discharges resulting from cleanup of releases of toxic and hazardous wastes are to marine waters or near coastal waters. The discharges from cleanup of these releases, by their nature, typically occur in proximity to the source of contamination as the treatment systems are either mobile units brought to the site for short term operation, or constructed on-site for long term cleanups. While the ongoing discharges expected to be eligible for coverage under this permit are at identified locations, throughout the life of the permit, many additional "new dischargers" will become eligible due to cleanup getting underway at additional remediation sites, new construction discharge projects, or at one of the other Table I categories. Geographic locations of these discharges are not yet known.

The majority of the discharges are related to the management of groundwater that has been contaminated by human activities but in some instances from naturally occurring contaminants. The discharges contain one or more pollutants from common chemical groups, such as suspended solids, petroleum hydrocarbons, other volatile organic

compounds, semi-volatile compounds, and metals. See Appendix III of the RGP for a complete listing of pollutants covered by this permit.

Given the variety of potential pollutants and broad geographic coverage of the permit, all federally managed species with designated EFH in the coastal and inland waters of Massachusetts and New Hampshire could be affected by the RGP.

**5. EPA's Determination Regarding Impacts**

EPA believes that the impacts from discharges authorized under this general permit will be negligible to EFH for a number of reasons.

First, the impacts will be negligible if the dischargers meet the stringent requirements specified in the permit. The general permit contains effluent limitations and other conditions, such as influent and effluent monitoring, to insure state water quality standards are met for a wide variety of contaminants and discharge types. Because the general permit is designed for a variety of potential situations, the effluent limitations in the permit (other than for metals) have been set conservatively at zero dilution. For metals, permittees can consider dilution yet the concentration may not exceed a technology based ceiling value derived from industrial standards.

Additionally, although the permit does not require the use of specific treatment technologies, from historical data, EPA has observed that the treatment technology typically employed at these sites routinely produces high quality effluent, often at concentrations below laboratory quantification levels. Further, the permit requires permittees to implement best management practices (BMPs), including the basic requirements listed in Part I.E.1, to minimize the impacts of the activities and discharges to the environment. The permittee must certify the BMP plan each year and implementation of the plan is subject to inspection.

Second, the majority of discharges anticipated to be covered by the RGP are low volume and short duration. The discharges covered by this permit are typically designed with flow rates of a few gallons per minute up to about 30 gallons per minute (approximately 40,000 gpd) and range from a few days to 2 years. EPA believes that these characteristics will help to minimize impacts on EFH.

In addition to the monthly monitoring requirements, as an additional safeguard, the permit allows EPA to require toxicity testing where needed to verify that the discharge is not having toxic impacts on sensitive species. Additionally, the general permit maintains EPA's ability to require an individual permit if applicants encounter particularly difficult pollutant control situations or where conditions described in the NOI indicate that expected impacts could be unacceptably increased. Similarly, EPA can revoke coverage under the general permit at any time if any adverse impacts to federally managed or protected species or their habitats occur either as a result of non-compliance or from

unanticipated effects from this discharge. In such cases, EPA would reinitiate consultation with NMFS based on this new information.

## D. Historic Preservation

Facilities which adversely affect properties listed or eligible for listing in the National Registry of Historic Places under the National Historic Preservation Act of 1966, 16 USC Sections 470 et seq. are also **not** authorized to discharge under this permit. Applicants must determine whether the discharge, and the construction of any treatment devices or structures housing them, authorized under this RGP has the potential to affect a property that is either listed or eligible for listing on the National Register of Historic Places. Electronic listings of National and State Registers of Historic Places are maintained by the National Park Service (www.nr.nps.gov/nrishome.htm), the Massachusetts Historical Commission (www.state.ma.us/sec/mhc.) and the New Hampshire Historical Commission (www.state.nh.us/nhdhr.). For additional information regarding the requirements pertaining to historic places, see Appendix VII, section II, of the the RGP.

Applicants must comply with applicable State, Tribal and local laws concerning the protection of historic properties and places and applicants are required to coordinate with the State Historic Preservation Officer and/or Tribal Historic Preservation Officer and others regarding effects of any discharges covered by this permit on historic properties. Addresses for MA State Historic Preservation Officers and Tribal Historic Preservation Officer are:

MA State Historic Preservation Officer
MA Historical Commission
220 Morrissey Blvd.
Boston, MA 02125
Tel No. (617) 727-8470, Fax No. (617) 727-5128;

Tribal Historic Preservation Officer
Wampanoag Tribe of Gay Head (Aquinnah)
20 Black Brook Road
Aquinnah, MA 02535-9701
Tel No. (508) 645-9265, Fax No. (508) 645-3790

and for NH:

State Historic Preservation Officer
NH Division of Historic Resources
P.O. Box 2043
Concord, NH 03302-2043
Tel. No. (603) 271-6435, Fax No. (603) 271-3433

## E. Requiring Coverage Under an Individual Permit or Other General Permit

### 1. When the Director May Require Application for an Individual NPDES Permit

The RGP provides that EPA may require an individual permit or recommend coverage under a separate general permit. This authority is contained in 40 CFR Section 122.28(b)(3). These regulations also provide that any interested party may petition EPA to take such an action. The issuance of the individual permit or other general permit would be in accordance with 40 CFR Part 124 and would provide for public comment and appeal of any final permit decision. Circumstances under which the Director may require an individual permit are described in 40 CFR Section 122.28(b)(3)(i)(A-G).

The Director may require any person authorized by this permit to apply for and obtain an individual NPDES permit. Instances where an individual permit may be required include the following:

1) The discharge(s) is a significant contributor of pollution;
2) The discharger is not in compliance with the conditions of this permit;
3) A change has occurred in the availability of the demonstrated technology of practices for the control or abatement of pollutants applicable to the point source;
4) Effluent limitation guidelines are promulgated for point sources covered by this permit;
5) A Water Quality Management Plan or Total Maximum Daily Load containing requirements applicable to such point source is approved;
6) The discharge is to an outstanding natural resource water;
7) Adequate stream flows to protect the existing and designated uses established in the state's water quality standards are not maintained by the facility;
8) The discharge causes or may cause violations to the water quality standards of the receiving water or if actual or imminent harm to aquatic organisms is identified;
9) The discharge adversely impacts any federally managed species for which Essential Fish Habitat has been designated;
10) The discharge is into waters that are not attaining state water quality standards for the pollutants to be discharged;
11) The point source(s) covered by this permit no longer:
    i) Involves the same or substantially similar types of operations;
    ii) Discharges the same types of wastes;
    iii) Requires the same effluent limitations or operating conditions;
    iv) Requires the same or similar monitoring; or
12) In the opinion of the Director, the discharge is more appropriately controlled under an individual or different general permit.

If the Director requires an individual permit, the permittee will be notified in writing that an individual permit is required, and will be given a brief explanation of the reasons for this decision. When an individual NPDES permit is issued to an operator otherwise

subject to this general permit, the applicability of this permit to that owner or operator is automatically terminated on the effective date of the individual permit.

## F. EPA Determination of Coverage

Any applicant may request to be included under this general permit but the final authority rests with the EPA. Coverage under the general permit will not be effective until EPA-NE has reviewed the certification, existing file information, made a determination that coverage under the RGP is appropriate, and notified the owner/operator in writing of its determination. The effective date of coverage will be the date of signature of the EPA notification letter by the Director.

# VI. Effluent Limitations

## A. Background

**1. Statutory Requirements**: Section 402 of the CWA, 33 USC 1342, authorizes EPA to issue NPDES permits allowing discharges that will meet certain requirements, including CWA Sections 301, 304, and 401 (33 USC 1331, 1314, and 1341). These statutory provisions state that NPDES permits must include effluent limitations requiring authorized discharges to: i) meet standards reflecting specified levels of technology-based treatment requirements; ii) comply with State water quality standards; and iii) comply with other state requirements adopted under authority retained under CWA Section 510, 33 USC 1370.

EPA is required to consider technology and water quality requirements when developing permit limits. 40 CFR Part 125, Subpart A, sets the criteria and standards that EPA must use to determine which technology-based requirements, requirements under Section 301(b) of the Act and/or requirements established on a case-by-case basis under Section 402(a)(1) of the Act, should be included in the permit.

The CWA requires that all discharges, at a minimum, must meet effluent limitations based on the technology-based treatment requirements for dischargers to control pollutants in their discharge. Section 301(b)(1)(A) of the CWA requires the application of Best Practicable Control Technology Currently Available (BPT) and Section 301(b)(2) of the CWA requires the application of Best Conventional Control Technology (BCT) for conventional pollutants, and Best Available Technology Economically Achievable (BAT) for non-conventional and toxic pollutants. BPT requirements were to be in effect by July 1, 1977 and BCT/BAT requirements by March 31, 1989. Thus for all dischargers covered by this general permit, BCT/BAT requirements apply.

EPA has been developing Effluent Limitations Guidelines (ELGs) for existing industrial activities for BPT and BAT as directed in the original Federal Water Pollution Control Act Amendments of 1972. Although many ELGs have been developed, no ELGs have as

yet been developed which cover the types of discharges covered by this general permit. Therefore, as provided in Section 402(a)(1) of the Act, EPA is establishing the technology-based effluent limitations in this RGP utilizing Best Professional Judgement (BPJ) to meet the requirements for BCT/BAT. It is important to note that the majority of pollutants being regulated by this general permit are Toxic Pollutants subject to BAT requirements.

Under Section 301(b)(1)(C) of the CWA, discharges are also subject to effluent limitations based on water quality standards. Section 303(c) of the CWA requires every state to develop water quality standards applicable to all water bodies or segments of water bodies which lie within the State. Waters within the State are classified according to use and numerical and/or narrative standards are adopted and approved by EPA. Permits issued by EPA must obtain state certification under Section 401 of the CWA that insures the water quality standards will be satisfied. Along with the technology-based effluent limitations described above, the water quality standards are used to establish water quality-based effluent limitations in this general permit as applicable.

**2. Approach to Development of Effluent Limitations:** - In conducting research to develop this general permit, EPA-NE noted that there are very few precedents for general permits similar in scope to this permit. However, there are a number of States that have issued remediation discharge permits for petroleum related cleanups. A few States have included other pollutants such as halogenated volatile organic compounds and metals. All of the permits researched have fairly similar requirements including the selection of discharge parameters. The effluent limitations vary somewhat primarily due to differing state requirements and standards. Treatment technologies are all similar to those described in this Fact Sheet.

For example, New Jersey has issued several iterations of a petroleum cleanup permit which currently includes additional parameters. The State of Connecticut is nearing issuance of a comprehensive NPDES cleanup permit covering a wide range of petroleum and non-petroleum activities similar to this permit. EPA developed a model general permit for gasoline site cleanup discharges in 1989. Also, in New England, Rhode Island has issued general permits for gasoline only and #2 fuel oil cleanups, while Vermont has recently issued a general permit for petroleum related cleanup activities. Other permits reviewed included those developed by EPA Regions IV and VI, and States of PA, WV, AK, TX, and LA which are all primarily petroleum related permits.

Through implementation of projects pursuant to approved site remediation projects over the past decade, EPA-NE has developed significant experience with a broad range of discharges from remedial activities. EPA-NE has reviewed approximately 2,000 applications for discharge from a wide variety of owners and operators. In issuing discharge approval letters and setting effluent limitations and monitoring requirements for these actions, EPA has determined that many common contaminants are found at similar sites. Also, the monitoring requirements for these discharges have typically

included monthly influent and effluent analysis for a wide variety of pollutants. EPA has noted that the treatment technologies employed are fairly standardized and generally produce similar effluents. Based on this database of information, EPA has examined the common types of pollutants encountered, their ability to be treated, their effluent characteristics, and information on laboratory protocols.

Historically, in establishing effluent limitations for site remediation projects, EPA-NE's approach was conservative and relied primarily on human health-based water quality criteria values. Many of these values were derived for specific pollutants from existing standards, such as drinking water "maximum contaminant levels"or MCLs. Additionally, for site remediation projects, EPA-NE has established water quality-based numerical limitations for parameters such as metals. The States of MA and NH have also adopted various numerical standards for ground waters and surface waters which provide guidelines from which to establish appropriate effluent limitations for a wide variety of pollutants covered by this RGP. A summary of available standards is presented in Appendix A of this Fact.

Based on all of the available information, EPA-NE has concluded that:
i) a comprehensive set of discharge parameters can be selected;
ii) appropriate standards, both numerical and narrative, exist to evaluate and establish permit limitations, and
iii) that cost effective technology (BAT) currently exists and is in wide use to meet and/or exceed the limitations to insure that water quality standards are met on a consistent basis.

**3. Selection of Parameters and Limits**

a. General Approach

EPA-NE has determined that the various types of discharges can be broadly grouped into categories of similar activities and, that within these activity groups, common pollutants are typically found (see Tables I and III in sections I.A and B above). The potential exists for any one or groups of chemicals listed as toxic or hazardous pollutants under various EPA and state water (e.g., CWA Priority Pollutants) and remediation programs (Superfund, RCRA Corrective Action, Leaking Underground Storage Tanks) to be present at a contamination site. Based on available literature, reviews of other existing permits, as well as operational information from site remediation projects, EPA-NE has determined that it would be both impractical and unnecessary to attempt to document and limit every contaminant which could be present in a discharge under this permit. For example, one of the most common categories of discharge which may be covered by this permit is cleanup of gasoline releases from underground storage tanks (USTs). There may be more than 50 chemical constituents in refined gasoline and another 30 - 40 chemical additives used for various purposes in the final product delivered to a retailer.

Of the many individual chemicals potentially encountered in discharges covered by this permit, the physical/chemical characteristics of individual chemicals or compounds often make them useful as "indicator" pollutants for establishing technology-based (BAT) effluent limitations. Rather, than limiting all the possible pollutants in a common group, it is often more protective and efficient to regulate an indicator contaminant. Different pollutants or classes of compounds may have varying susceptibilities to treatment by pollution control technologies. Certain pollutants or classes of pollutants may be more toxic than others but the removal of an indicator chemical can insure that other chemicals with similar characteristics will also be removed. For example, benzene is often used as an indicator compound in the control of the volatile organic compounds (e.g., toluene, ethylbenzene, and xylenes) in gasoline and other gasoline constituents (see EPA's model permit for cleanup of gasoline releases - 1989) due to its chemical characteristics and behavior when available control methods are used.

Based on the information available, including discharge monitoring reports from more than 2,000 historical sites, EPA-NE has selected a limited number of pollutants for specific effluent limitations in the permit (see Appendix III of the RGP). In general, these pollutants represent those which are most commonly reported from the types of activities being covered by this permit. Additional parameters were evaluated for inclusion in the general permit, but were not listed for a number of reasons including: i) non-relevance; ii) uniqueness - may need an individual permit; iii) rarely found in discharges; iv) common pollutants which are known to be removed along with indicator pollutants; or v) other factors. EPA-NE has decided that some parameters (for example, pesticide compounds) are infrequently encountered in discharges covered by this permit and if an owner/operator determines that a compound(s) is a significant contaminant in the water, an individual NPDES permit may be required or another means of handling the wastewater may be necessary.

b. Examples - Selection of Permit Parameters

An evaluation of the type of discharge is required for the Notice of Intent (NOI) application form. From reviews of available literature, other EPA and state issued NPDES permits, and the review and issuance of over 2,000 approved site remediation projects in MA and NH, the following example scenarios provide additional background on how parameters were selected for this RGP.

Example #1: A cleanup at a former leaking underground gasoline tank (UST) at a service station requires a short-term dewatering for tank replacements or long-term ground water pump & treat.

Site Characterization: Gasoline is the only known source of contamination.

Pollutants/Indicators: Total Petroleum Hydrocarbons (TPH)
Benzene

BTEX - Benzene, Toluene, Ethylbenzene, Xylenes
Naphthalene
Total Lead (If any indication of "older" gasoline containing tetra-ethyl/methyl lead)
Methyl tert-Butyl Ether (MtBE), tert-Butyl Alcohol (TBA) or other additives/oxygenates
Total Iron (If high iron content groundwaters, potential iron fouling)

Example #2: A fuel oil (#2 heating oil or other) release cleanup requires soil removal with dewatering.

Site Characterization: Fuel Oil(s) are the only contaminants.

Pollutants/Indicators: Total Suspended Solids (TSS)
TPH
Benzene + BTEX
Naphthalene + Polycyclic Aromatic Hydrocarbons (PAHs)
Total Iron

Example #3: Remediation of a former electronics facility release of solvents/degreasers with dewatering

Site Characterization: Site screening identifies chemicals of concern.

Pollutants/Indicators: Chlorinated Volatile Organic Compounds (VOCs)
(e.g. trichloroethylene, tetrachloroethylene, dichlorobenzenes, vinyl chloride, etc.)
pH (standard units)
Metals (copper, zinc, lead, iron, etc)

Example #4: Construction excavation in an older "urban fill" area requires dewatering.

Site Characterization: Typically soil borings/test pits reveal contaminated soils needing to be classified for disposal. Some low level groundwater contamination will be exacerbated by excavation.

Pollutants/Indicators: TPH, pH, TSS, PAHs, Metals

## B. Discussion of Specific Parameters and Associated Effluent Limitations in RGP

The pollutant limits in Appendix III of the RGP represent a mix of technology- based effluent limitations (e.g., for the volatiles and semi-volatiles) and water quality-based effluent limitations (e.g., for the metals and chlorine). In establishing the effluent limits,

EPA-NE evaluated concentrations achievable using currently available pollution control technology, as well as the the current aquatic and health based standards established for each compound. Since there are no national effluent limitation guidelines for the categories of discharges covered by this general permit, EPA has used Best Professional Judgement to establish the effluent limits.

Over the past decade, EPA has set limits for, and received discharge and treatment system performance data from more than 2,000 remediation activities in MA and NH. In developing this permit, EPA-NE has continued the practice of setting a maximum value effluent limitation for each parameter. In some cases, the limits have been set at different assumed average hardness values for the receiving waters in each State. The limits have been based on the nature of treatment systems typically used (e.g. physical and/or chemical treatment) which are amenable to frequent start-up and shut-down and the once per month grab sample monitoring requirements. Both the selection of parameters and the determination of the limits were based on the demonstrated performance of similar systems in-the-field.

Generally, for the majority of compounds, the technology-based limits achieve concentrations that are coincidentally at or below human health based water quality criteria. However, for a number of contaminants, including: **Benzene; Carbon Tetrachloride; 1,2 Dichloroethane; Tetrachloroethylene; 1,1,2 Trichloroethane; Trichloroethylene; Vinyl Chloride; Bis (2-Ethylhexyl) Phthalate; Arsenic; and Iron,** the limits are higher than the human health criteria. Thus, in certain low flow or zero dilution receiving waters where the effluent essentially constitutes the flow, the effluent limitations for these compounds could potentially exceed the human health based standards.

Based on this potential, EPA-NE has evaluated the need for human health-based effluent limitation for these contaminants. One option would be to prohibit the discharge to very low flow or zero flow receiving waters such as wetlands or intermittent streams to insure a dilution factor would be available and adequate to maintain human health criteria values. However, EPA-NE has determined that except in rare circumstances, the prohibition of discharge is not necessary for a number of reasons.

First, human health-based standards are typically developed to achieve certain risk-based concentrations based on long-term (e.g., 70 year or lifetime) exposure to the toxic material (e.g., less than a one in a million additional cases of cancer drinking water ingested over a lifetime). Yet, the majority of discharges anticipated to be covered by the RGP are short duration (e.g., from a few days to 1-2 years). The longest discharges observed by EPA-NE in the site remediation projects were a few instances of groundwater remediation systems that have pumped and treated water for approximately 10 years. Second, the discharges covered by this permit are typically small volume discharges, designed with flow rates of a few gallons per minute up to about 30 gallons per minute (approximately 40,000 gpd). Therefore, EPA does not anticipate any

discharges covered by the permit to expose individuals at concentrations of concern for a lifetime.

Third, because a general permit is designed for a variety of potential situations, the effluent limitations (other than for metals) have been set conservatively at zero dilution. But, low flow or zero flow waters are not typically used as sources of drinking water, although they may be in recharge areas or tributary to waters used as water supplies. Furthermore, discharges to public drinking water supply (Class A waters) are essentially excluded from coverage under the permit. Additionally, in many instances, there will be some flow or dilution available in the actual receiving water. Although dilution is only being considered in setting the limits for discharges of metals, EPA believes that human health risks will be effectively mitigated by the combination of the technology based limits and dilution found in typical receiving waters.

Finally, when EPA and the States review the notice of intent (NOI) for discharges under this permit and determine that there are unusual circumstances where human health criteria based limits are needed for these compounds, EPA will issue an individual permit.

As discussed above, for discharges containing metals, dilution is being considered in setting the effluent limits in the permit. For the majority of situations, the treatment systems are expected to remove contaminants down to very low levels that should be capable of achieving water quality standards for zero dilution situations. However, for metals, EPA has decided to apply a dilution factor for two reasons. First, the aquatic life water quality standards for several metals are lower than can be typically achieved with standard treatment. And second, a number of metals are naturally occurring or secondary to more voluminous and toxic compounds found in the discharge (e.g., hydrocarbons).

For example, for a mixed effluent of pollutants that includes petroleum hydrocarbons and/or industrial solvents (volatile organic compounds or VOCs), there may also be low levels of one or more metals present in the groundwater. The primary concern of the groundwater remediation is removing the BTEX, PAHs, and VOCs using standard treatment such as carbon adsorption. The low levels of metals in the groundwater would be a secondary concern and to further reduce them at zero dilution could require significant additional expense and complexity of the treatment system. If the receiving water has available dilution, simple changes could be made to components of the standard treatment train, such as enhancing the filtration step for fine solids (assuming that the metals are bound to the fines), before the carbon treatment to remove enough metals to meet the metals limit with dilution.

In the case of chlorine (TRC), typically, dilution would be based on the low flow of the receiving water and factored into the effluent limit for TRC for individual NPDES permits. In the RGP, however, EPA is establishing a single effluent limit for TRC that anticipates de-chlorination or chlorine control and therefore does <u>not</u> provide for

calculation of TRC limits based on available dilution.

The following is a discussion of the individual pollutants/indicator parameters, the proposed limitations, and the rationale for the limits imposed. The section numbers correspond to the parameter numbers listed in Appendix III of the RGP. Unless otherwise indicated, the averaging times associated with the limits are as follows. Where the limit is based on chronic water quality criteria, the averaging time is a monthly average. Otherwise, if the limit is based on acute water quality criteria, human health criteria, or available technology, the averaging time is daily maximum.

**1. Total Suspended Solids (TSS)**

a. General Limit - The limit for TSS may be both a BAT/BCT and a WQBEL based limitation. Solids are considered a "conventional pollutant" (as opposed to toxic). Suspended materials in water can cause turbidity, discoloration, interruption of light passage for aquatic growth, coating of fish gills, and sedimentation on stream bottoms interfering with egg laying and feeding. They can also act as carriers (through adsorption) of toxic materials and cause interference with proper operation and maintenance of the typical treatment systems used for the pollutant control in this permit (e.g. air stripping, carbon adsorption, ion exchange, etc.). Groundwater, such as from extraction wells used in ground water pump & treat systems, is typically low in TSS. TSS is more of a problem in construction operations where soils and organic materials are being disturbed and mixed with ground waters or storm waters.

EPA-NE has determined that control of TSS in the waste streams from a large number of the dischargers covered by this RGP should be required, especially discharges from any sites involving construction or disruption of soils or sediments. A TSS limit is particularly important to maintaining good operation of subsequent treatment units in the system such as carbon adsorption (e.g clogging of pores in the carbon granules) and to aid in the removal of contaminants which are adsorbed to soil particles.

Treatment technology is well understood and a properly designed sedimentation and/or filtration system can readily remove TSS to low concentrations. Examples of established effluent limitations for TSS in other permits include: i) the conventional technology treatment standards promulgated by EPA at 30 milligrams per liter (mg/l) monthly average, and 45 mg/l weekly average for sewage treatment plants, ii) EPA-NE's General Permit for Construction Dewatering at uncontaminated sites includes limits for TSS at 50 mg/l average and 100 mg/l maximum (assumes simple sedimentation treatment); iii) EPA's promulgated effluent guidelines, Part 436 for Mineral Mining, Industrial Sand category, sets TSS limitations of 25 mg/l average and 45 mg/l maximum; iv) EPA's proposed effluent guidelines, Part 440 for Ore Mining categories, sets TSS limitations of 20 mg/l average and 30 mg/l maximum. Considering all of these limits and technical factors, this general permit sets a technology based TSS limit of 30 mg/L.

b. TSS limit for hydrostatic testing - After installation or certain types of repair, tanks and pipelines must be tested with water, i.e., hydrostatic testing. Typically, the tanks or pipes are sealed, filled with water, and pressurized to check on the structural integrity of the vessel. Following the test, the water is removed from the vessel. These discharges are often large volume, short term discharges of one or two days.

Although this RGP is primarily intended for management of ground water and incidental storm waters, EPA-NE is establishing a separate TSS effluent limit for hydrostatic testing discharges from gas and oil tanks and pipelines due to the unique nature of these activities. In the site remediation projects, EPA-NE has typically required these projects to include "best management practices" (BMPs), e.g., pre-cleaning the vessels before filling with water, as well as numerical limits for specific parameters, e.g., TSS, BTEX, TPH, etc.

In researching available limits for this permit, EPA-NEalso found a number of examples of numerical permit limits across the country, particularly in the southwestern U.S. where there are many oil and gas pipelines and storage facilities. Several States have proposed or issued general permits for hydrostatic discharges from gas pipelines that contained TSS limitations. For example, the TSS maximum limit for gas pipelines in Oklahoma and Arkansas is 45 mg/l. In Missouri, the TSS maximum limit is 100 mg/l and the average is 50 mg/l. In California, TSS limits are 75 mg/l maximum and 50 mg/l average. Similarly, the TSS limit that EPA-NE uses for construction dewatering in the general permit for uncontaminated water ("clean water") is set at 50 mg/l.

Most often, these limits have been met successfully through the use of pre-cleaning only as a treatment and EPA-NE is setting the limit in this permit based on this widely used technology. EPA-NE recognizes that some older vessels may not be thoroughly pre-cleaned prior to typical hydrostatic testing. In those cases, the limits in this general permit may not be achievable without additional treatment of the effluent prior to discharge. Alternatively, such facilities may decide to apply for an individual NPDES permit prior to conducting hydrostatic testing.

Considering the state and EPA general permit limits, this permit sets a technology based limit for TSS from hydrostatic testing waters for new and existing gas and oil tanks and pipelines at 50 mg/L.

**Proposed Effluent Limitation for TSS (except for hydrostatic testing):**
**Maximum Value = 30 mg/l**
**Proposed Effluent Limitation for TSS only for hydrostatic testing of gas and oil tanks and pipelines:**
**Maximum Value = 50 mg/l**

**2. <u>Total Residual Chlorine (TRC)</u> -** Chlorine is not a pollutant typically found at sites or other activities subject to this RGP, although many toxic organic compounds contain chlorine molecules in their chemical makeup. However, chlorine compounds are sometimes introduced to control bacterial growth in the treatment systems or in pipelines and tanks which are being hydrostatically tested. Similarly, in certain situations such as at construction sites, incidental domestic sewage may be encountered in which case disinfection may be required prior to discharge. As discussed previously, the TRC limit in this permit does not allow the consideration of dilution at a particular site. Therefore, if chlorine has been added to the wastewater, the operator will need to de-chlorinate prior to discharge in order to meet the limits.

The EPA National Recommended Water Quality Criteria (the "Criteria", FR Notice Dec 10, 1998 updated in EPA publication #822-R-02-047, Nov 2002) sets recommended freshwater and saltwater standards for chlorine for both acute and chronic toxicity which guide the development of TRC effluent limits in NPDES permits. Typically, the dilution, based on the low flow of the receiving water, would be factored into the effluent limit for TRC for individual NPDES permits. In the RGP, however, EPA-NE is establishing a single effluent limit for TRC and not providing for calculation of TRC limits based on available dilution.

Addition of chlorine compounds for activities covered by the RGP can be tightly controlled for specific purposes. Permittees covered by the RGP who submit information in an NOI or an NOC under this permit which indicates that chlorine compounds are used in the activity or treatment system must dechlorinate and monitor for the TRC in the effluent. In order to protect water quality, this permit sets effluent limits based on the EPA recommended water quality criteria which are 11 ug/L for freshwater (chronic) and 7.5 ug/L for saltwater (chronic). In all cases, the concentration of the total residual chlorine (TRC) in the effluent shall not exceed a compliance limit of 0.02 milligrams per liter (mg/l) or parts per million (ppm) based on the current minimum reporting level (ML) for chlorine residual.

**<u>Proposed Effluent Limitation for TRC</u> :**
**Maximum Value for Freshwater = 11 ug/L**
**Maximum Value for Saltwater = 7.5 ug/L**
**Compliance Limit = 0.02 milligrams per liter (mg/L)**

**3. <u>Total Petroleum Hydrocarbons (TPH)</u>** - EPA-NE has been incorporating TPH as a parameter at all petroleum related site remediation projects. Historically, "Oil & Grease" was the primary petroleum related parameter used in many of EPA-NE's individual NPDES permits and is a common parameter in many of EPA's promulgated industrial effluent guidelines. The "hydrocarbon" fraction of the oil and grease parameter, or TPH, is the most appropriate parameter for inclusion in this permit. A total oil and grease analysis would include other non-petroleum fats and greases in the result which would not be relevant to the activities covered by the RGP.

Similarly, due to the shear number of chemicals contained in refined petroleum products, measurement of all of the component chemicals is not practical, cost effective or needed for adequate attainment of water quality standards. An aggregate measurement of the hydrocarbon compounds serves as an indicator of overall relative pollutant concentration and as an indicator for assessing water quality impacts. Individual analytes of TPH, such as benzene, toluene, etc., which are also parameters in this permit, provide additional chemical specific controls on the discharge. Additionally, the hydrocarbon makeup in the environment changes after the product has been released through leaks, spills, or other releases due to volatilization, biodegradation, sorption, etc. which occurs over a period of many years in the groundwater. This is sometimes referred to as "weathering" of the release in the soil, ground water, etc.

There is some variability to the quantification of TPH. There are several EPA approved methods (and modifications allowed) currently being widely used. EPA methods 418.1 (recently replaced by Method 1664 to eliminate the use of Freon) and Modified Method 8100 are both "extraction" procedures which may eliminate certain gasoline range ($C_5$ to $C_9$) volatile organic (GRO) compounds. It is also important to note that MA DEP uses an alternative methodology for analysis known as the Volatile Petroleum Hydrocarbon and Extractable Petroleum Hydrocarbon, or VPH/EPH, method. This method is required to be used for measuring petroleum hydrocarbons at sites being cleaned up under the MA Contingency Plan (MCP, Chapter 21E). The VPH/EPH method reports results in terms of concentrations of ranges of Aliphatic and Aromatic hydrocarbons (e.g., $C_5$ to $C_{36}$).

It is important to differentiate between the EPA TPH methods and the MA DEP's methods due to the large percentage of discharges eligible for coverage under this permit which are a result of cleanup actions under the MCP. EPA often receives data on applications and monitoring reports from MA dischargers containing VPH/EPH results along with "target" analyte data such as benzene, MtBE, etc. Using the EPH portion of the test results approximates the equivalent TPH value in the EPA approved extraction procedure methods. The MA DEP has also established certain risk based limits in the MCP groundwater and soil cleanup standards for the various hydrocarbon fractions. However, EPA does not currently have a means to evaluate carbon range data supplied under the MCP methods or to "translate" the data to evaluate compliance with NPDES permits which contain chemical specific numerical limits for toxics which are related to specific water quality criteria developed for specific pollutants. The State of NH does not utilize alternative protocols for TPH. Therefore, EPA-NE has not incorporated VPH/EPH requirements in this permit for discharges in MA.

In establishing the proposed effluent limit for TPH, EPA-NE reviewed a number of sources, including the substantial monitoring data being submitted pursuant to approved site remediation projects, reviewed a number of other EPA and state issued general permits and related effluent guidelines developed by EPA. Site remediation projects in MA and NH have consistently required an effluent limit maximum value for TPH of 5.0 parts per million (ppm) or milligrams per liter (mg/l). Review of monitoring information

indicates that this limit is readily attainable with standard treatment technology and rarely exceeds 1.0 mg/l in the effluents reported. Typically, the results are "less than" the laboratory reporting levels (0.2 - 0.5 mg/l).

Regarding monitoring of TPH, EPA recognizes that arguments can be made to not require TPH monitoring at gasoline only sites. However, given the variability of cleanup sites, the historic operations of typical gasoline stations which included general repairs, oil changes, supply of diesel fuel, and other considerations, EPA proposes to retain the limitation and monitoring of TPH for all discharges. Operators may submit a "notice of change" (NOC) form based on operating data to request changes to TPH monitoring in certain circumstances.

EPA-NE has carefully evaluated the available information to establish a limitation for TPH in this general permit. Monitoring data from the many treated discharges in MA and NH authorized by EPA indicated that discharges can consistently meet limitations of less than 5.0 mg/l. EPA-NE is proposing to maintain the technology based TPH limitation of 5.0 mg/l as a maximum value for discharges in MA and NH.

**Proposed Effluent Limitation for TPH: Maximum Value = 5.0 mg/l (5,000 ug/L)**

**4. Cyanide** - Compounds containing the cyanide group (CN) are used and readily formed in many industrial processes and can be found in a variety of effluents, such as those from steel, petroleum, plastics, synthetic fibers, metal plating, and chemical industries. Cyanide occurs in water in many forms, including: hydrocyanic acid (HCN), the cyanide ion ($CN^-$), simple cyanides, metallocyanide complexes, and as organic compounds. "Free cyanide" is defined as the sum of the cyanide present as HCN and $CN^-$. The relative concentrations of these forms depend mainly on pH and temperature.

Both HCN and $CN^-$ are toxic to aquatic life. However, the vast majority of free cyanide usually exists as the more toxic HCN. And, since $CN^-$ readily converts to HCN at pH values that commonly exist in surface waters, EPA's cyanide criteria are stated in terms of free cyanide expressed as $CN^-$. Free cyanide is a more reliable index of toxicity to aquatic life than total cyanide because total cyanides can include nitriles (organic cyanides) and relatively stable metallocyanide complexes.

EPA-NEhas set the cyanide limits in this general permit considering a number of factors, including: water quality criteria, the MCL, and the existing limits in MA and NH (see Appendix A of this Fact Sheet). EPA's national water quality criteria for cyanide are 5.2 ug/L (chronic) and 22 ug/L (acute) for freshwater, and 1.0 ug/L (acute or chronic) for saltwater. EPA-NE has carefully evaluated a number of sources of information to establish a limitation for cyanide in this general permit. In order to be most protective, limits are based on the chronic water quality criteria for cyanide at 5.2 ug/L for freshwater and 1.0 ug/L for saltwater.

**Proposed Effluent Limitation for Cyanide:**
**Maximum Value = 5.2 ug/L for freshwater**
**Maximum Value = 1.0 ug/L for saltwater**

**5. - 9. Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)**

a. Limiting BTEX and Benzene - EPA-NE estimates that greater than 50 percent of the discharges eligible for coverage by this permit contain petroleum related compounds in the contaminated water. These discharges are the result of managing contaminated groundwaters resulting from gasoline or other fuels or oil releases which contain compounds which are soluble in water at various concentrations.

1) Background - The four Alkyl Benzene volatile organic compounds (benzene, toluene, ethylbenzene, and the ortho, para, and meta xylenes) are common constituents of petroleum fuels. For example, in gasoline, these compounds may contain approximately 2% Ethylbenzene, 5% Benzene, and 11-12% Toluene and Xylenes depending on the formulation. The term BTEX, representing the sum of the concentrations of these four compounds, is commonly used by the petroleum industry in measuring the quality of fuels. This parameter has been adapted for use by EPA and state agencies to serve as a measure of effluent quality of these contaminants in water and to serve as an "indicator" parameter representing the wide variety of compounds found in petroleum products (see "Model NPDES Permit for Discharges Resulting From The Cleanup of Gasoline Released From Underground Storage Tanks;" June 1989).

In evaluating technology-based effluent limits, the BTEX compounds have similar physical/chemical characteristics which can be used to assess the treatability of the contaminated water. Several important characteristics include the "Henry's Law" constant, the octanol/water partitition coefficient or $K_{ow,}$ the organic carbon partition coefficient or $K_{oc,}$ and the chemical's solubility in water (see definitions for additional information). Table V provides comparison values for these physical/chemical characteristics for the BTEX compounds and many of the other parameters contained in this permit.

Since air stripping and carbon adsorption are the most widely used treatment technologies for control of volatile, semi-volatile, or non-volatile organic compounds in water, the evaluation of the chemical characteristics will allow an evaluation of the potential ease of removal of contaminants by these treatment methods. In general, the more soluble a substance is in water the more difficult it is to remove by air stripping and carbon treatment. Additionally, the lower the Henry's law constant, the harder the compound is to remove by air stripping alone. Potential for carbon treatment (or natural soil attenuation) can be evaluated by using the partition coefficients (Kow and Koc) which provide an indication of the tendency of organic compounds to "sorb" onto soil or carbon particles (e.g. carbon adsorption). Lower Kow and Koc values (e.g., less than 100) indicate less efficient sorption.

## Table V: Chemical Coefficients for Selected Permit Parameters

| PARAMETER | SOLUBILITY (mg/l) | Henry's Law atm-$m^3$/mole | Koc | Kow |
|---|---|---|---|---|
| **Benzene** | 1750 | 0.0056 | 83 | 132 |
| **Ethylbenzene** | 152 | 0.0064 | 1100 | 1410 |
| **Toluene** | 535 | 0.0064 | 300 | 537 |
| **Mixed Xylenes** | 198 | 0.0070 | 240 | 1830 |
| **m-Xylene** | 130 | 0.0107 | 982 | 1820 |
| **o-Xylene** | 175 | 0.0051 | 830 | 891 |
| **p-Xylene** | 198 | 0.0071 | 870 | 1410 |
| **Naphthalene** | 32 | 0.0012 | 1300 | 2760 |
| **Ethylene Dibromide** | 4300 | 0.00067 | 14-160 | 58 |
| **Methyl-tert-Butyl Ether** | 54,000 | 0.00059 | log Koc 0.55-.9 | Log Kow 0.94-1 |
| **tert-Butyl Alcohol** | Miscible | 0.000012 | log Koc 1.57 | Log Kow 0.35 |
| **tert-Amyl Methyl Ether** | | 0.002 | | |
| **Tetrachloro-ethylene** | 150 | 0.026 | 364 | 398 |
| **1,1,1-Trichloro-ethane** | 1500 | 0.014 | 152 | 316 |
| **1,1,2-Trichloro-ethane** | 4500 | 0.0012 | 56 | 295 |
| **Trichloro-ethylene** | 1280 | 0.0099 | 126 | 240 |
| **Vinyl Chloride** | 2670 | 0.082 | 57 | 24 |
| **Acetone** | Miscible | 0.000019 | | log Kow -0.24 |
| **1,4 -Dioxane** | Miscible | | | |
| **Phenols** | 93,000 | 0.0000028 | 14.2 | 28.8 |
| **Penta-chlorophenol** | 14 | 0.00000045 | 53,000 | 100,000 |
| **Bis -2-Ethylhexyl Phthalate** | 0.3 | 0.00000036 | 5900 | 9500 |

Rather than attempt to establish effluent limits for every compound found in a petroleum release, selection of those compounds which would be most difficult to remove to low levels, coupled with an evaluation of the degree of toxicity of the compound, will provide an adequate indicator of removal of the other compounds in the contaminated water being treated with the standard technologies. Benzene has commonly been selected as a primary indicator of effluent quality for these reasons. In fact, EPA's Model NPDES Permit for Cleanup of Gasoline (June 1989) discusses the rationale for selection of Benzene and BTEX as appropriate parameters for discharge permits.

2) Setting the Limit for BTEX - Virtually all EPA and state issued permits for petroleum remediation discharges reviewed in the research for this permit limit BTEX as a secondary parameter. All of the BTEX compounds have closely related chemical characteristics to Benzene. However, the composition of gasoline is highly variable and for some gasoline products, any one of the four BTEX compounds could be the dominant constituent. Therefore, regulating the total of the four, rather than individually, provides a useful secondary indicator for control of water discharges containing volatile petroleum contaminants (see discussion of oxygenates below).

EPA's "Model NPDES Permit for Discharges Resulting From The Cleanup of Gasoline Released From Underground Storage Tanks;" (June 1989), recommends a BTEX limit of 100 ug/L. This limit is based on the typical removal efficiency of 99.5% or better for BTEX using a commercially available air stripper unit. Based on EPA's model permit and the observed performance of control equipment at historical or existing cleanup sites in New England, EPA-NE is setting a technology based limit for BTEX at 100 ug/L.

3) Setting the General Limit for Benzene - Of the compounds in gasoline, Benzene has one of the highest solubilities in water and one of the lowest Henry's law constants. Thus when using air stripping, Benzene will be more difficult to remove. Benzene also has a low Koc value. Thus, it will be the most likely to "break through" when using carbon treatment and appear in the effluent when the carbon's adsorptive capacity is becoming exhausted and needs replacement. Since Benzene is an indicator compound, Benzene breakthrough would also indicate that other hydrocarbons are no longer being sorbed as well. Benzene is also one of the most toxic constituents (listed as a carcinogen in EPA's drinking water standards). Therefore, an effluent limitation on Benzene is needed and will insure adequate control of the majority of the many other volatile gasoline constituents.

In establishing a technology-based effluent limit for Benzene, EPA-NE evaluated the current aquatic and health based standards established for this compound. The goal of this permit is to provide conservative protection for the receiving waters since the location of "new" discharges and the receiving water quality is not known for purposes of developing this permit. For many organic compounds, the health-based standards are most conservative. Health-based standards are typically developed to achieve certain

risk-based levels based on long-term (lifetime) exposure to the toxic material. For example, a certain concentration in water ingested over a lifetime may cause a one in a million additional cases of cancer.

Discharges covered by this permit will not typically be discharged directly to a drinking water supply, however since the limitations in this permit are not being developed on an individual or site-specific basis, the permit must be protective of all potential uses or exposure scenarios. Since the technologies used to treat Benzene, BTEX, and many of the other pollutants covered by this permit, can typically achieve minimum laboratory detection or reporting level concentrations, the lowest established human health or aquatic criteria are usually acceptable for establishing effluent limitations, however, there are a number of caveats which have to be considered on a chemical by chemical basis.

The most commonly used technology-based effluent limit for Benzene is 5.0 ug/L which is also the current Maximum Contaminant Level (MCL) for Benzene in drinking water. The most recent EPA published (November 2002) recommended water quality criteria value for human health for Benzene is 2.2 ug/L (consumption of water + organisms) and 51 ug/L (consumption of organism only). Thus in certain low flow or zero dilution receiving waters where the effluent essentially constitutes the flow, an effluent limitation of 5.0 ug/L could exceed the human health based water quality standard for consumption of water and organisms.

Based on this potential, EPA-NE has evaluated the need for a water quality-based effluent limitation for Benzene. One option would be to prohibit the discharge to very low flow or zero flow receiving waters such as wetlands or intermittent streams to insure a dilution factor (DF) would be adequate to maintain the criteria value. However, EPA-NE has determined that except in rare circumstances, the prohibition of discharge approach is not necessary for a number of reasons.

First, low flow or zero flow waters are not typically used as sources of drinking water although they may be in recharge areas or tributary to waters used as water supplies. Second, the human health criteria values are based on a “lifetime” exposure scenario or continuous consumption of certain amounts of water at the concentration levels of concern. The majority of discharges anticipated to be covered by the RGP are short duration (e.g., from a few days to 1-2 years). These pump and treat systems are typically small discharges, designed with flow rates of a few gallons per minute up to about 30 gallons per minute (approximately 40,000 gpd). Also, EPA-NE believes that the proposed limit will not be problematic because typical treatment systems, if operating properly, will produce an effluent quality at lower concentration than the currently accepted laboratory quantification levels for Benzene, which are 0.5 - 2.0 ug/L or lower than the most conservative standard. Finally, if the NOI for discharge under this permit indicates some unusual circumstances where the effluent limitation for Benzene or the BTEX compounds may be problematic or human health criteria based limits are needed, EPA-NE will issue an individual permit.

b. Benzene limit for hydrostatic testing - After installation or certain types of repair, tanks and pipelines must be tested with water, i.e., hydrostatic testing. Typically, the tanks or pipes are sealed, filled with water, and pressurized to check on the structural integrity of the vessel. Following the test, the water is removed from the vessel. These discharges are often large volume, short term discharges of one or two days.

Although this RGP is primarily intended for management of ground water and incidental storm waters, EPA-NE is establishing a separate benzene effluent limit for hydrostatic testing discharges from gas and oil tanks and pipelines due to the unique nature of these activities. Historically, EPA-NE has typically required these dischargers to implement "best management practices" (BMPs), e.g., pre-cleaning the vessels before filling with water, as well as numerical limits for specific parameters, e.g., TSS, BTEX, TPH, etc.

EPA-NE considered a number of resources in setting the benzene limit for hydrostatic testing. First, EPA-NE reviewed the natural gas pipeline industry study of hydrostatic test water discharges from existing natural gas pipelines ("Environmental Aspects of Hydrostatic Test Water Discharges: Operations, Characterization, Treatment and Disposal," Tallon, Myerski and Fillo, prepared for the Gas Research Institute, April, 1996). The Gas Research Institute (GRI) study gathered data on benzene in hydrostatic test water both before and after treatment. The results of the information in the GRI study indicate pre-scouring (or "pigging" as its known in the industry) to be the most effective way of lowering benzene levels in the test water discharges. The study showed that 50 ug/l benzene was achievable in the grab sample with the highest benzene level. Based on the results of the GRI study, EPA Region 6 and Louisiana proposed or issued permits contain the benzene limit of 50 ug/L for hydrostatic test water.

EPA-NE recognizes that some existing vessels may not be thoroughly pre-cleaned prior to typical hydrostatic testing. In those cases, the limits in this general permit may not be achievable without additional treatment of the effluent prior to discharge. Alternatively, such facilities may decide to apply for an individual NPDES permit prior to conducting hydrostatic testing.

Based on the GRI study and the existing limits in other states, EPA-NEhas set a technology based maximum level for Benzene from hydrostatic testing discharges at 50 ug/L.

**Proposed Effluent Limitation for Benzene:**
**Maximum Value (except hydrostatic testing dischargers) = 5.0 ug/L**
**Maximum Value for hydrostatic testing dischargers = 50.0 ug/L**

**Proposed Effluent Limitation for BTEX (sum of Benzene, Toluene, Ethylbenzene, and m,p,o-Xylenes): Maximum Value = 100 ug/L**

**10. <u>Ethylene Dibromide (EDB)</u> - (also 1,2-Dibromomethane) -** EDB is included as a parameter in this permit due to the historic use of this compound as a plant fumigant (pesticide) and as an additive in leaded gasoline (as a lead scavenger, especially in aviation fuels) although due to its toxicity, most uses of EDB have been eliminated since the mid 1980s. Direct application of EDB and releases of gasoline to the environment have contaminated groundwaters in New England. EDB has been identified at a small number of sites where discharges exist which are expected to be covered under this permit. Additional sites may also require coverage for this pollutant for future discharges.

EDB has not been included as a priority pollutant for development of national water quality criteria, however Maximum Contaminant Levels (MCLs) have been established under EPA's drinking water program. The current MCL is 0.05 ug/L or 50 parts per trillion. The groundwater standard in New Hampshire is also 0.05 ug/L while the proposed GW-1 groundwater standard in Massachusetts is 0.02 ug/L.

EDB is typically found at very low concentrations in contaminated groundwaters. It is typically being treated with granular activated carbon (GAC) treatment systems, although it is somewhat more difficult to remove from water than Benzene (see Benzene discussion and Table V). Review of monitoring data indicates that an effluent limitation established at 0.05 ug/L can be achieved by current technology. Therefore, EPA-NE is setting a technology based effluent limit of 0.05 ug/L for EDB.

**<u>Proposed Effluent Limitation for Ethylene Dibromide (EDB)</u> :**
**Maximum Value = 0.05 ug/L**

11. - 13. **<u>Oxygenate Compounds: Methyl-tert-Butyl Ether (MtBE), tert-Butyl Alcohol(TBA), tert-Amyl Methyl Ether (TAME)</u>** - Many chemical compounds have been added to petroleum fuels to enhance their performance. Due to the phase-out of leaded gasoline, in the early 1980's, several alcohols and ethers began to replace tetraethyl lead as an anti-knock and octane boosting additive. Since 1992, higher concentrations of gasoline "oxygenates" (which improve the combustion of fuel) such as MtBE have been used in certain air pollution "non-attainment" areas of the country including the Northeastern US (all of Massachusetts and the southern counties of New Hampshire).

<u>a. Background on gasoline oxygenates</u> - As a replacement for lead containing compounds, MtBE was used in concentrations of 2-4% and as high as 8% in gasoline. When the 1990 Clean Air Act requirements for cleaner burning fuels took effect (which required additional oxygen content), MtBE concentrations increased to 11-15% by volume. As a result, MtBE and several of the other oxygenate compounds have been detected in significant concentrations in groundwaters due to tank leaks or other releases of petroleum fuels.

As recently as April 2003, the New England Interstate Water Pollution Control Commission (NEIWPCC), under an agreement with EPA, has conducted surveys of all 50 States to collect information on state requirements for oxygenate contamination at leaking underground storage tank (LUST) sites. Most States, including MA and NH have established groundwater standards of varying types for MtBE and to a lesser degree, other oxygenate compounds such as TBA and TAME. A number of other oxygenates including; Ethyl Tertiary-Butyl Ether (ETBE), Diisopropyl Ether (DIPE), and Ethanol (EtOH)(ethyl alcohol) have limited standards developed and are also not significant in New England. In the near future changes may occur due to various state bans being enacted on the use of MtBE due to groundwater contamination. It can be assumed that even with stringent controls on underground storage tanks, leaks and spills of fuels will occur.

Due to the significant numbers of MtBE contaminated groundwater sites being cleaned up and the resulting surface water discharges in MA and NH, EPA-NE has for some time included MtBE as a parameter in remediation projects using the available state drinking water standards (currently 13 ug/L in NH and 70 ug/L in MA) as effluent limits on an interim basis. In 2002, EPA-NE became aware of some sites where high levels of TBA contamination were also at issue. The NH DES established an interim cleanup guideline for TBA of 1,000 ug/L which is currently used for discharge limitations in that State. An Action Level of 1,000 ug/L for TBA is in place in MA although EPA does not currently limit TBA in MA discharges.

b. Consideration of gasoline oxygenates for permit limits - In preparation of this permit, EPA-NE conducted additional research on the various gasoline oxygenates to better understand the existing and potential contamination caused by the oxygenate compounds and to determine appropriate permit requirements. EPA's UST program office has encouraged States to recognize and monitor additional oxygenate compounds beyond MtBE at UST release sites nationally (memorandum S. Ng, Jan. 18, 2000). Recent articles have also suggested that MtBE is not the only issue in dealing with groundwater contamination by fuel oxygenates and more monitoring and standards setting needs to be done. According to the NEIWPCC survey, many States are reevaluating existing standards and developing new standards for other oxygenate compounds.

In evaluating the information available regarding the most likely contaminants to be of concern in MA and NH for this permit, EPA-NE reviewed survey data from EPA's Air Program Offices on the composition of reformulated gasoline fuels (RfG) sold in various metropolitan areas of the country. Survey data for several locations in New England including the Boston-Worcester metropolitan area, Springfield, MA, and Manchester NH for the years 1995-2002 provides the following information.

**Table VI: Oxygenate Content in RFG in Selected Metropolitan Areas***

| AREA | MTBE (wt %) | TBA (wt %) | TAME (wt %) |
|---|---|---|---|
| BOSTON-WORCESTER | 10.2 | 0.03 | 1.6 |
| SPRINGFIELD | 10.2 | 0.02 | 1.8 |
| MANCHESTER | 11.0 | 0.03 | 0.9 |

* Summertime Average Values for 1995-2002, Other oxygenates are negligible.

The solubility, Henry's law, and Koc values for the oxygenates indicate potential treatment effectiveness issues for gasoline oxygenates (see Table V above). For example, MtBE is about 30 times more soluble than Benzene and is about 10 times less volatile than Benzene when moving from dissolved phase in water to a vapor phase (e.g. air stripping) due to the lower Henry's law constant. MtBE is also much less likely to sorb to organic carbon due to a lower Koc than benzene (see OUST Fact Sheet #2 and Table V for selected chemical constants). In using air stripper technology, significantly more air capacity is required to strip MtBE from water. Using carbon treatment, additional carbon capacity is necessary and more frequent carbon change-outs are required. Both of these factors increase the cost of operation and maintenance. Therefore, the parameters which make Benzene attractive as an indicator of treatment efficiency for the majority of the other constituents in fuels, do not necessarily apply to the oxygenates.

For this permit, EPA-NE has determined that MtBE, TBA, and TAME should be considered chemicals of concern and listed as permit parameters. Additional information including the potential change from reliance on MtBE as an additive, may re-direct future versions of this permit. This general permit is being issued for a 5 year period. During the effective life of this permit or upon re-issuance, EPA may modify or revise this permit to include additional oxygenate parameters and/or revise effluent limitations as additional information warrants.

c. Establishing limits for gasoline oxygenates - To establish appropriate effluent limitations for MtBE, TBA, and TAME, EPA evaluated both technology-based and water quality-based requirements. EPA has gained considerable experience from the treatment of MtBE contaminated waters since limitations for this parameter have been in place for a number of years in MA and NH and in other States around the country. Additionally, EPA-NE has issued several hundred NPDES discharge authorizations in NH and MA including MtBE as a parameter with the associated state standards as effluent limits. Less information is available for treatment of TBA and TAME in wastewaters.

1) MtBE - For the site remediation projects in Massachusetts and New Hampshire, EPA

has required monitoring of both influent and effluent samples. Many of the data reports submitted from these sites include technical discussions of treatment efficiency, operational problems, and other information. These reports also indicate that MtBE contamination is common at most gasoline related cleanup sites and is found at other sites where known releases of gasoline may not be readily apparent. The reports show that concentrations of MtBE in water have been treated effectively from a few tens or hundreds of parts per billion (ug/L) to many thousands of parts per billion. In the majority of discharges, permittees have been able to meet the effluent limitations (13 ug/L in NH and 70 ug/L in MA) using air stripping and/or carbon adsorption, although challenges in treatment to low concentration have been noted in some instances. This is also borne out in the literature reviewed (EPA-OUST Fact Sheet #2, Jan 98, and others).

In determining water quality-based effluent limitations for the oxygenates of concern, these compounds are currently not listed as priority pollutants by EPA and as such have not had either aquatic or human health standards developed under EPA's water quality programs. The majority of work regarding oxygenates has been through the underground storage tank and drinking water programs where the primary concern has been impacts on ground waters and health impacts from drinking water obtained from wells. EPA's drinking water program has not yet established Maximum Contaminant Levels (MCLs). However, EPA has issued lifetime health advisories for MtBE in drinking water based primarily on taste and odor thresholds and the advisory concentrations are also considered protective of human health. An advisory from 1996 established a MtBE concentration level of 70 parts per billion as being protective. The current advisory establishes a concentration of 20 - 40 parts per billion (ug/L) of MtBE in drinking water as a threshold value for taste and odor.

At the state level, the NEIWPCC state survey results for oxygenates at LUST sites indicates a fairly wide range of the type of standard established as well as numeric values where they exist. The States were asked if they had established Action Levels, Cleanup Levels, and/or primary, secondary or advisory type drinking water standards (EPA advisory or other State advisory) for the various oxygenates. Forty-two States responded that they have a level or standard in place for MtBE. The lowest action level reported is 12 ug/L (WI) and the lowest cleanup level reported is 10 ug/L (NY). The lowest primary drinking water standard reported is 10 ug/L (DE) with the next lowest being 13 ug/L (NH and CA). The lowest secondary drinking water standard is 5 ug/L (CA). As discussed previously, the State of NH has established a primary drinking water standard of 13 ug/L, a secondary standard of13ug/L and an ambient groundwater standard of 70 ug/L. MA has established action and cleanup levels at 70 ug/L and a drinking water advisory at 70 ug/L as well. Currently, MA is considering lowering these levels.

In summary, EPA-NE has determined that MtBE is the primary contaminant of concern for control under this permit and that it is appropriate to establish effluent limitations. Given the national trend to lowering of human health standards for fuel oxygenates in water, and based on the wide variability of discharge scenarios (e.g. receiving water

classes, low flows, etc.), EPA-NE is proposing that a conservative limitation be adopted in this permit.

In NH, which has one of the lowest state standards in the country (13 ug/L), the effluent limitation will continue to be set at that level as is currently the case for site remediation activities in NH. In MA, EPA has previously required an effluent limit of 70 ug/L from discharges from site remediation projects based on the current state cleanup standard (GW-1 under the state MCP). However, monitoring reports from gasoline remediation sites pursuant to approved site remediation projects demonstrate that using best available treatment (e.g. air stripping and/or carbon) a limit of 20 ug/L is feasible. Therefore, EPA is setting a technology based limit for MtBE of 20 ug/L (the lower EPA advisory threshold for taste and odor effects and for the assurance of protection of human health).

2) TBA and TAME - Less information is currently available for TBA and TAME than is for MtBE. However, we do know that TBA, which can be present as both a fuel additive and as a breakdown product of MtBE in the environment, is essentially miscible in water, has a much lower Henry's law constant ($10^{-5}$) and also a low Koc value. Thus, TBA is expected to be even more difficult than MtBE to control to low concentrations.

Currently, ten States have developed or proposed levels or standards for TBA and 5 States for TAME. The lowest action levels for TBA are 12 ug/L (CA) and "any amount" (NY). The State of NJ has established a cleanup level for TBA of 100 ug/L. Of three States with primary drinking water standards, the lowest is 15 ug/L (CO). The State of NH has established an advisory level in drinking water for TBA of 1,000 ug/L. For TAME, of two States with cleanup levels, the lowest is 190 ug/L (MI) and the lowest primary drinking water standard is 50 ug/L (NY).

In NH and MA, TBA has been reported at several cleanup sites and is suspected to be present at others and may exist at high concentrations. TAME is reported to be present in significant concentrations in gasoline products sold in NH and MA and would likely be present in groundwater releases. EPA-NE has determined that additional monitoring for these two parameters should be required at all fuel release cleanup sites covered under this permit. This is supported by the national trend to require monitoring for oxygenates in addition to MtBE and to establish standards for them.

Insufficient data exists at this time to establish appropriate technology-based or water quality-based effluent limitations for TAME. Therefore, this permit requires only monitoring for TAME. Although little data is available for TBA, EPA-NE is setting a technology-based limit of 1,000 ug/L, NH's current advisory level.

**Proposed Effluent Limitations for Methyl-tert-Butyl Ether (MtBE):**

**New Hampshire Maximum Value = 13.0 ug/L**
**Massachusetts Maximum Value = 20.0 ug/L**

**Proposed Effluent Limitations for Tert-Butyl Alcohol (TBA):**

**New Hampshire = 1,000 ug/L**
**Massachusetts - Monitor Only**

**Proposed Effluent Limitations for Tertiary-Amyl Methyl Ether (TAME):**

**New Hampshire & Massachusetts - Monitor Only**

14. **Naphthalene** - Naphthalene is a common constituent of coal tars and petroleum. It is used as an intermediate in the production of dye compounds and the formulation of solvents, lubricants, and motor fuels. It is one of a number of polynuclear (or polycyclic) aromatic hydrocarbon (PAH) compounds (see further information in this section on PAHs) included as priority pollutants under the CWA. Naphthalene is only slightly soluble in water (approximately 30 mg/l), however it is highly soluble in Benzene and other solvents. The model permit for gasoline suggested that Benzene would be an appropriate indicator of removal of Naphthalene as well as the other BTEX compounds. Naphthalene is, however, also a significant component of fuel oils (several percent by volume) and is found as a contaminant at a number of older industrial sites such as former coal gas plant facilities and what EPA-NE refers to as "urban fill" sites.

In reviewing data submitted pursuant to approved site remediation projects, Naphthalene was noted in a wide variety of discharges. Therefore, EPA-NE is including Naphthalene both as a stand alone parameter and with the group of the other 17 PAH compounds (see Group II PAH compounds). EPA-NE evaluated both technology-based and water quality-based effluent limits for Naphthalene for this permit. In evaluating analytical information on contamination in water, however, it was important to note that Naphthalene may be reported by both volatile petroleum hydrocarbon analysis and extractable petroleum hydrocarbon analysis since it is within the dividing region between purgeable and extractible organics (see MADEP VPH/EPH Methods, June 2001).

As stated above, based on the chemical characteristics of Henry's law constant and Koc values similar to BTEX compounds (see Table V above), Naphthalene is expected to be removed to low concentrations (at or below laboratory reporting levels) by the standard treatment technologies. EPA has limited Naphthalene as a parameter at most petroleum fuel cleanup sites in MA and NH and other sites such as former coal gasification plant sites. Monitoring reports indicate typical influent concentrations of Naphthalene in the range of less than 10 to several thousand parts per billion in waters being treated. Effluent concentrations have typically been at the laboratory reporting levels using combinations of air stripping and/or carbon adsorption treatment.

The available water quality-based information for Naphthalene is limited. As with several of the BTEX compounds, EPA has previously published lowest observed effects levels numbers (LOELs) for the acute and chronic effects on freshwater and saltwater

species. The most conservative value is 620 ug/L for freshwater chronic effects (see Appendix A of this Fact Sheet). Regarding human health effects, EPA has not published an MCL for Naphthalene for drinking water however the 2002 compilation of EPA drinking water standards and health advisories, lists Naphthalene as a Group C, possible human carcinogen. EPA's recommended level for a lifetime exposure via drinking water is 100 ug/L. The current ambient groundwater standard in NH and MA is 20 ug/L.

Given the concentrations demonstrated as readily achievable with standard treatment technology, EPA-NE is setting a technology based limit of 20 ug/L for discharges under this general permit.

**Proposed Effluent Limitation for Naphthalene: Maximum Value = 20 ug/L**

15. - 28. **Chlorinated Volatile Organic Compounds -** A number of chlorinated volatile organic compounds have been commonly reported as contaminants in groundwater at many remediation and construction dewatering sites in MA and NH. These compounds are typically present in ground waters or in some cases surface waters, as a result of releases from manufacturing and other operations where these chemicals are or were used in production of products, as common industrial solvents or cleaners (e.g. paint thinners and removers, de-greasers, dry-cleaning agents, etc.), and due to the fact that many of these compounds are commonly found in household hazardous wastes. It is common to find mixtures of these compounds to be present at cleanup sites either due to use or storage of a variety of chemicals at a certain location or due to the weathering and chemical breakdown of a primary compound after release to the environment. The concentrations found typically range from several hundred to the tens of thousands of parts per billion (ug/L) both as individual compounds and as total VOC's.

To select the most appropriate chemicals to include as parameters in this permit, EPA-NE reviewed many applications and monitoring reports pursuant to approved site remediation projects to determine which of the compounds were most prevalent in discharges in MA and NH. Many of these compounds have similar chemical characteristics (see Table V above) which is important in evaluating potential treatment technologies. Based on prior monitoring reports, EPA expects that, in most instances, efficient control or removal of these compounds will also insure removal of other compounds with similar chemical characteristics which are not included as parameters in this permit. However, as a precaution, applicants will be required to identify all other chemical compounds found, or believed to be present at a site, and include them in the NOI for evaluation by EPA or the States.

The following 14 chlorinated volatile organic chemicals are selected as parameters for this permit:

**i) Carbon Tetrachloride;**
**ii) 1,2 (or o)-Dichlorobenzene (o-DCB);**
**iii) 1,3 (or m)-Dichlorobenzene (m-DCB);**
**iv) 1,4 (or p)-Dichlorobenzene (p-DCB);**
**v) 1,1-Dichloroethane (DCA);**
**vi) 1,2-Dichloroethane;**
**vii) 1,1-Dichloroethylene (DCE);**
**viii) cis-1,2-Dichloroethylene;**
**ix) Dichloromethane (DCM), or Methylene Chloride;**
**x) Tetrachloroethylene (PCE);**
**xi) 1,1,1-Trichloroethane (TCA);**
**xii) 1,1,2 Trichloroethane;**
**xiii) Trichloroethylene (TCE); and**
**xiv) Vinyl Chloride.**

Table V provides some of chemical characteristics of these selected compounds for comparative purposes to evaluate likely treatment and removal by the standard technologies. A number of other similar volatile organic chemicals were not included as parameters in the permit, however. The most significant reasons for not including a particular parameter include the infrequency in which a parameter has been reported at sites, lower toxicity, and the probable removal of the contaminant along with other included chemicals by standard technology.

To establish appropriate effluent limitations for these selected VOC's, EPA-NE evaluated both the technology and water quality-based information currently available. EPA-NE reviewed the substantial number of monitoring reports submitted pursuant to approved site remediation projects in MA and NH, as well as the published technology information available on various EPA and other internet sites, and the various water quality and cleanup standards published by EPA and the States (see Appendix A of this Fact Sheet).

In general, the technology-based effluent limitations are sufficient to meet the most conservative water quality standards, typically, human health based standards. The available information indicates that with few exceptions, properly designed and operated treatment units including air stripping and/or activated carbon, can achieve effluent concentrations at laboratory reportable values (often referred to as "non-detection" in reports). In the RGP, EPA-NE has set technology based limits for all of the chlorinated VOCs. For many of these compounds, the technology based limits coincide with, or are more restrictive than, EPA's and or the States' human health criteria, MCLs, and/or state adopted groundwater standards. For example, for 1,4 (or p)-Dichlorobenzene (DCB); 1,2 (or o)-Dichlorobenzene (DCB); 1,3 (or m)-Dichlorobenzene (DCB); 1,1 Dichloroethane (DCA); 1,1 Dichloroethylene (DCE); cis-1,2 Dichloroethylene (DCE); Dichloromethane

(methylene chloride); and 1,1,1 Trichloroethane (TCA), the limits set are at or below water quality standards.

However, for a number of contaminants, including: Carbon Tetrachloride; 1,2 Dichloroethane, Tetrachloroethylene, 1,1,2 Trichloroethane; Trichloroethylene, and Chloroethene (Vinyl Chloride), the proposed limits are higher than the human health criteria. EPA-NE has evaluated the need for human health based limitations for these contaminants but determined that, except in rare circumstances, such limits are not necessary for the types of discharges covered by this permit for a number of reasons.

First, human health-based standards are typically developed to achieve certain risk-based concentrations based on long-term (e.g., 70 year or lifetime) exposure to the toxic material. However, the majority of discharges anticipated to be covered by the RGP are short duration (e.g., from a few days to 1-2 years). Second, the discharges covered by this permit are typically small volume discharges, designed with flow rates of a few gallons up to about 30 gallons per minute (approximately 40,000 gpd). Third, because a general permit is designed for a variety of potential situations, the effluent limitations have been set conservatively assuming zero dilution. But low flow or zero flow waters are not typically used as sources of drinking water. Further, discharges to public drinking water supplies (Class A) are essentially excluded from coverage under the permit. Also, in many instances, there will be some flow or dilution available in the receiving water. While not formerly considered in setting these limits, EPA believes that the long term human health risks will be effectively mitigated by the combination of the technology based limits and the dilution found in typical receiving waters. Finally, if any notice of intent (NOI) for discharge under this permit indicates unusual circumstances where the effluent limitation compounds may be problematic or human health criteria based limits are needed, EPA will issue an individual permit.

**Table VII - Proposed Effluent Limitations for Chlorinated VOC Compounds:**

| **Parameter** | **Maximum Value (ug/L)** |
|---|---|
| **15. Carbon Tetrachloride** | **4.4** |
| **16. 1,4 (or p)-Dichlorobenzene (p-DCB)** | **5.0** |
| **17. 1,2 (or o)-Dichlorobenzene (o-DCB)** | **600** |
| **18. 1,3 (or m)-Dichlorobenzene (m-DCB)** | **320** |
| **19. 1,1 Dichloroethane (DCA)** | **70** |

| | |
|---|---|
| **20. 1,2 Dichloroethane (DCA)** | **5.0** |
| **21. 1,1 Dichloroethylene (DCE)** | **3.2** |
| **22. cis-1,2 Dichloroethylene (DCE)** | **70** |
| **23. Dichloromethane (methylene chloride)** | **4.6** |
| **24. Tetrachloroethylene (PCE)** | **5.0** |
| **25. 1,1,1 Trichloroethane (TCA)** | **200** |
| **26. 1,1,2 Trichloroethane (TCA)** | **5.0** |
| **27. Trichloroethylene (TCE)** | **5.0** |
| **28. Chloroethene (Vinyl Chloride)** | **2.0** |

29. & 30. **Acetone and 1,4 Dioxane -** While New Hampshire and Massachusetts both have either proposed or adopted acetone and 1,4 dioxane limits for discharges to groundwater, neither EPA or the States have established water quality criteria for these compounds. Based on the limited information that EPA NE has on both acetone and 1,4 dioxane in surface water, at this time, the RGP only requires monitoring. EPA will evaluate the monitoring information received and in the future will decide whether to set a numeric limitation.

**Proposed Effluent Limitations for Acetone and 1,4 Dioxane : Monitor Only**

31. & 32. **Total Phenol and Pentachlorophenol (PCP) -** Phenol and Phenolic compounds are widely used as chemical intermediates such as the manufacture of phenolic resins, as disinfectants, antiseptics, and pesticides, and many other applications. Releases to the environment may occur from manufacturing, use of products containing phenols, and from combustion sources, coal gas, and natural decay of organic matter. Phenol and a number of other compounds including nitro-phenols and chlorinated phenols are listed as both priority and non-priority pollutants which have been evaluated for the establishment of water quality criteria. Phenol and a number of other phenolic compounds are also included in EPA's water quality criteria documents as having "organoleptic" (taste and odor) effects in water at low levels.

EPA-NE evaluated the available information from site remediation projects in MA and NH to determine the frequency with which phenol and phenol compounds were reported in the various discharges from activities to be covered by this permit. The occurrence of phenol or phenol compounds is infrequent, possibly due to rapid bio-degradation of phenol in the environment. Therefore, EPA-NE is proposing the inclusion of only phenol and pentachlorophenol as individual parameters in this permit: phenol, due to its wide use and distribution in the environment, and pentachlorophenol, due to it's extensive use as a

wood preservative. EPA-NE is not including the nitro-phenols and other chlorinated phenols, however. If an applicant is aware that the proposed discharge contains these other compounds, the information must be included in the NOI. This information will then be reviewed by EPA and the States who will determine if an individual permit is needed.

EPA-NE has evaluated existing technology based effluent limits and the need for water quality based effluent limits for phenol and pentachlorophenol. The current EPA drinking water life-time health advisory for phenol is 4,000 ug/L, however the currently published organoleptic effect criteria value for phenol is 300 ug/L (threshold value for taste and odor impacts in water). Other published water quality criteria including EPA "lowest observed effects levels" (LOELs) and the State of NH adopted criteria for freshwater and saltwater aquatic life range from 2,560 ug/L, the freshwater chronic value, to 10,200 ug/L, the freshwater acute value. Both NH and MA groundwater standards are currently 4,000 ug/L for phenol.

Phenol has a very low Henry's law constant of approximately 3 $x10^{-7}$ and a Koc value of approximately 30 making treatment of phenol by air stripping difficult and removal by carbon adsorption somewhat difficult. EPA, however, does not expect phenol to be a significant treatment issue. Therefore, based on water quality criteria and available technology, and given the potential for discharge to low flow receiving waters, EPA is proposing a technology based effluent limitation for phenol at 300 ug/L, which is the threshold for causing taste and odor effects in water.

Pentachlorophenol (PCP) has been widely used as a wood preservative for utility poles, fenceposts, and other wood preservation treatment, thus there is a potential for levels of this chemical to be found at sites generating waters subject to this permit. PCP is considerably more toxic to aquatic life and human health than phenol as shown by comparing the various published water quality standards for phenol and PCP in Appendix A of this Fact Sheet. PCP is classified as "B2" (probable carcinogen) in EPA's 2002 drinking water standards update. The toxicity of PCP is also dependent on the pH of the receiving water. The standard values published in the November 2002 update of EPA's Water Quality Criteria are calculated at a pH of 7.8 (see the EPA publication for formula for conversion at other pH values). The NH DES published water quality standards for PCP are calculated at a pH of 6.5.

EPA has evaluated both technology and water quality-based effluent limitation requirements for PCP. From a technical standpoint, due to a very low Henry's Law constant of approximately 4.5 x $10^{-7}$, PCP will not be effectively removed by air stripping. However, the Koc values for PCP, depending on pH, can range from 1,250 - 25,000, making removal by carbon adsorption effective.

The water quality criteria for PCP are 19 ug/L for freshwater acute, 15 ug/L for freshwater chronic, and 13 ug/L saltwater acute. The current EPA drinking water MCL,

and NH and MA groundwater standard for PCP is 1.0 ug/L. Unlike Phenol, the organoleptic effect criteria published by EPA for PCP is 30 ug/L, which is higher than the aquatic or human health criteria values. In order to be conservative, EPA-NE is proposing a technology-based effluent limitation for PCP at 1.0 ug/L (ppb).

**Proposed Effluent Limitation for Phenol : Maximum Value = 300 ug/L**

**Proposed Effluent Limitation for Pentachlorophenol (PCP) :**
**Maximum Value = 1.0 ug/L**

33. & 34. **Phthalates and Bis (2-Ethylhexyl) Phthalate** - There are many phthalate compounds which are produced and widely used as plasticizers, resin solvents, wetting agents, and insect repellants among other uses. EPA has included a number of specific phthalate compounds on the CWA priority pollutant list including Diethyl and Dimethyl Phthalate, Butylbenzyl Phthalate, and others which are not considered highly toxic to aquatic life or human health in water. One widely used Phthalate compound, Bis(2-Ethylhexyl) Phthalate or Di(2-Ethylhexyl) Phthalate, is considerably more toxic and is included as a separate parameter in this permit.

To date, EPA and the States have published limited information regarding acceptable water quality standards for most phthalate compounds. EPA-NE expects that due to the wide use of these chemicals, they are likely to be detected at remediation and construction sites where discharges covered by this permit may occur. EPA-NE has evaluated a technology based standard for individual phthalates and total phthalates for this permit based on the relatively high Koc values of phthalate compounds and the likelihood that these compounds will be adequately removed by standard treatment technologies such as carbon adsorption. The phthalate compounds are also likely to exist at cleanup sites in combination with other more toxic parameters being controlled by this permit which will require similar treatment technology.

Neither EPA nor MA have water quality criteria for total phthalates. However, in NH, the freshwater chronic surface water criteria for total phthalate esters is 3 ug/l and the saltwater chronic criteria is 3.4 ug/l. Therefore, EPA-NE is proposing a limitation for total phthalates, excluding Bis (2-Ethylhexyl) Phthalate, of 3 ug/L in the effluent.

Bis (2-Ethylhexyl) Phthalate, also known as Di(2-ethylhexyl) Phthalate (or DEHP) is one of the most widely produced and used phthalate compounds. Primary use is as a plasticizer for polyvinyl chloride (PVC) and in other applications including insect repellants, cosmetics, soaps and detergents, synthetic rubber, and many other products. It is also in use as a replacement for PCBs as a di-electric fluid in transformers.

EPA has listed DEHP as class B2 or probable carcinogen in the 2002 drinking water standards update and in the 2002 surface water quality criteria update. EPA has published human health water quality criteria, however, has not yet published final

aquatic water quality criteria for DEHP. EPA-NE has not historically limited DEHP at site remediation projects in NH and MA. However, due to the wide use and distribution of DEHP in the environment, EPA-NE is proposing to include this parameter in this permit.

EPA-NE has evaluated both technology and water quality criteria in setting an effluent limitations for DEHP. DEHP has a very low Henry's Law constant of approximately 1 x $10^{-7}$ which indicates that volatilization and removal by air stripping would not be efficient. However, the very high Koc values indicate that it is not highly mobile in soils and will adsorb readily with carbon treatment. Regarding water quality criteria, EPA published lowest observed effects levels criteria for DEHP at 400 ug/L acute and 360 ug/L chronic values in both fresh and salt waters. The current EPA human health criteria are 1.2 ug/L for water plus organism intake and 2.2 ug/L for organism intake only. The current EPA MCL, as well as the NH and MA groundwater standards for DEHP, is 6.0 ug/L.

As with Benzene and several of the chlorinated volatile solvents, EPA-NE is proposing to establish a technology based effluent limitation for DEHP at 6.0 ug/L. This limit is slightly higher than the human health criteria. However, EPA-NE has evaluated the need for water quality-based effluent limitation for this contaminant and determined that except in rare circumstances, a health based limit is not necessary for the types of discharges covered by this permit for a number of reasons.

First, human health-based standards are typically developed to achieve certain risk-based concentrations based on long-term (e.g., 70 year or lifetime) exposure to the toxic material. However, the majority of discharges anticipated to be covered by the RGP are short duration (e.g., from a few days to 1-2 years). Second, the discharges covered by this permit are typically small volume discharges, designed with flow rates of a few gallons up to about 30 gallons per minute (approximately 40,000 gpd). Third, because a general permit is designed for a variety of potential situations, the effluent limitations have been set conservatively assuming zero dilution. But low flow or zero flow waters are not typically used as sources of drinking water. Furthermore, discharges to public drinking water supply (Class A waters) are essentially excluded from coverage under the permit. Also, in many instances, there will be some flow or dilution available in the receiving water. While not formerly considered in setting these limits, EPA believes that the long term human health risks will be effectively mitigated by the combination of the technology based limits and the dilution found in typical receiving waters .
Finally, if any notice of intent (NOI) for discharge under this permit indicates unusual circumstances where the effluent limitation compounds may be problematic or human health criteria based limits are needed, EPA will issue an individual permit.

**<u>Proposed Effluent Limitation for Total Phthalates (excluding DEHP)</u>:**
**Maximum Value = 3.0 ug/L**

**<u>Proposed Effluent Limitation for Bis(2-Ethylehexyl) Phthalate (DEHP)</u>: Maximum Value = 6.0 ug/L**

35. - 36. **<u>Poylcyclic Aromatic Hydrocarbons (PAHs)</u>** - There are many organic compounds included in a large group of chemicals known as polycyclic organic matter which have similar chemical structures and chemical characteristics. These are commonly known as Polynuclear, or Polycyclic, Aromatic Hydrocarbons (PAHs). They are found in fossil fuels, oil, coal, wood, and natural gas and are most often found in the environment from releases of petroleum products, the incomplete combustion/pyrolysis of fuels, and releases from products made from tars and pitches such as asphalt, various coatings, dyes, pharmaceuticals, insecticides and many other products. New England has many sites where PAHs have been found in soils and groundwaters. One common source is former coal gas production facilities which were once located in most urban areas to produce gas for street lighting and other uses. A number of PAH compounds are considered probable carcinogens. The PAHs also tend to bio-accumulate in fish and shellfish at low concentrations in water.

EPA has listed sixteen PAH compounds as priority pollutants under the CWA. For the development of this permit, EPA-NE has divided the priority pollutant PAH compounds into two groups based on carcinogenicity and based on their general use and likelihood of release to the environment. Included in these two groups are:

**Group I PAHs: a. Benzo(a) Anthracene, b. Benzo(a) Pyrene, c. Benzo(b)-Fluoranthene, d. Benzo(k)Fluoranthene, e. Chrysene, f. Dibenzo(a,h) Anthracene, g. Indeno(1,2,3-cd) Pyrene**

**Group II PAHs: a. Acenaphthene, b. Acenaphthylene, c. Anthracene, d. Benzo(ghi)-Perylene, e. Fluoranthene, f. Fluorene, g. Naphthalene, h. Phenanthrene, i. Pyrene**

In the past, EPA-NE has limited total PAH compounds at site remediation projects in MA and NH. Based on a review of information submitted by operators under this program, the more toxic/carcinogenic Group I parameters are not routinely reported in significant concentrations in the water being treated. The Group I compounds are mostly products of incomplete combustion of fossil fuels and, with the exception of Chrysene, are not produced commercially for use.

The Group II compounds are more common and are found as significant components of fuels, coal tar products, and from their use in manufacturing other products. Naphthalene is one of the most significant compounds typically reported in applications for discharges in MA and NH. Beside its manufacturing uses, it is a significant component in gasoline and fuel oil releases. Naphthalene has been grouped with the petroleum parameters discussed separately in this Fact Sheet. Other Group II PAH compounds commonly found in fuel oils include Acenaphthene, Fluorene, Phenanthrene, Pyrene, and Anthracene. PAH compounds are also reported at many contaminated construction

dewatering sites located in urban settings due to former industrial activity, local power generation, coal gas production, and the historic disposal of ash from combustion.

From a technology standpoint, most of the PAH compounds are only slightly soluble in water and have high Koc values ranging from approximately $1 \times 10^3$ to $1 \times 10^6$ thus making them nearly immobile in soil and amenable to removal by carbon adsorption. EPA-NE reviewed data submitted with applications from contaminated construction site dewatering and found that groundwaters from static monitoring wells at locations known to contain fuel oil releases, coal tars, or other PAH concentrations in soils, typically contain very low level PAH values due to their low solubility and immobility when released to the ground. However, PAH limitations and carbon treatment are found to be necessary due to the soil water mixing that occurs during construction.

All of the Group I and Group II PAH compounds have very low Henry's law constant values at the $10^{-4}$ to$10^{-6}$ range. Therefore, air stripping alone would not be expected to be adequate for removal of PAH chemicals. Monitoring data received by EPA-NE, indicates that with proper treatment, the PAH compounds will be removed to detectable or laboratory reportable concentration levels (see Appendix VI of the RGP).

As can be seen from Appendix A of this Fact Sheet, the water quality standards which have been published by EPA and the States for the Group I "carcinogen" PAH compounds are all related to human health effects due to the extremely low calculated values required to be protective. The latest (November 2002) revisions to EPA's surface water criteria contain human health levels for the Group I PAHs at either 0.0038 ug/L for "water and organism" or 0.018 ug/L for "organism only" consumption. The published standards for the Group II PAHs vary considerably based on the current scientific information, however the target levels are typically orders of magnitude higher than the Group I compounds. Due to the widely varying nature of the discharges covered by this permit and the respective receiving waters quality, the proposed effluent limits are based on a conservative approach.

The Group I PAH compounds are limited at the human health concentration of 0.0038 ug/L, with compliance limits set for each compound at the most stringent minimum levels (MLs) associated with federally approved test methods (see Appendix VI of the permit). The permit also sets a technology based "default" limit of 10.0 ug/L for <u>total</u> Group I PAHs (sum of the individual isomers). Again, it is expected that the typical treatment technology will remove these compounds to below detection levels.

For the Group II PAH compounds, EPA-NE is proposing a technology based limit for the most common parameter, Naphthalene, at 20.0 ug/L, which is below the water quality standards. Additionally, a technology based <u>total</u> limit of 100 ug/L is being proposed for the Group II PAH isomers due to the variability of the water quality criteria for the individual isomer as well as the ability of adequate current treatment technology to consistently meet this limit.

**<u>Proposed Effluent Limitation for Group I PAH Compounds</u>:**
**Individual Compounds Maximum Value = 0.0038 ug/L**
**Individual Compounds Compliance Limit = Minimum Level (ML)(see Appendix VI of RGP for MLs for each compound by EPA test method)**
**Total of Group I Isomers Maximum Value = 10.0 ug/L**

**<u>Proposed Effluent Limitation for Group II PAH Compounds</u>:**
**Naphthalene Maximum Value = 20.0 ug/L**
**Total of Group II Isomers Maximum Value = 100.0 ug/L**

37. **<u>Polychlorinated Biphenyls (PCBs)</u>** - Chlorinated Biphenyls, commonly known as PCBs represent a group of chemical compounds produced for their specific characteristics such as insulating dielectric fluids in capacitors and transformers. Besides their use in electrical equipment, PCBs were also used as plasticizers in rubber and synthetics, adhesives, de-dusting compounds, inks, cutting oil, pesticides, and sealant compounds. Given their many uses, they are widely distributed in the environment through product use, releases or spills from electrical equipment (for example, improper disposal of appliances containing PCB capacitors) and large power transformers, as well as direct discharge from industries using PCBs.

Individual PCB congeners are categorized as Aroclors. They are identified by a four digit number, for example “Aroclor 1254," where the first two digits identify that the substance is a biphenyl and the second two digits represent the approximate weight percent of chlorine (the exception to this is Aroclor 1016 developed later in attempting to reduce the environmental threat of PCBs). Lower chlorinated Aroclors (1221, 1232, 1016, 1242, and 1248) are colorless mobile oils. Increasing chlorine content turns them into viscous liquids (1254) or sticky resin (1260 and 1262). At the high end (1268 and 1270) they are white powders.

Because of their wide distribution, there are many known PCB disposal or release sites, including sites in MA and NH, on federal or state superfund cleanup lists. Every year, there are newly discovered contamination sites, often where construction activities have been planned. Historically, there have been numerous site remediation projects involved in cleaning up PCBs where ground or surface waters have to be managed for discharge.

PCBs are only slightly soluble in water and have generally high Koc values. Therefore, they can be adsorbed to soil and sediments and are not very mobile in the environment. Since one of the characteristics of PCBs is their resistance to degradation, they tend to persist in the environment and they tend to bioaccumulate in living organisms. Due to their chemical characteristics, PCBs are not likely to be released to groundwater. However, treatment of the water is required for all cases regardless of whether the PCB is the only significant pollutant or whether there are mixtures of other pollutants at the same site. The standard treatment technology currently used for discharges to surface water is carbon adsorption.

In evaluating the water quality requirements for development of a PCB effluent limitation for this permit, EPA reviewed the current standards (see Appendix A of this Fact Sheet). PCBs are listed as a priority pollutant by EPA under the CWA, however individual congeners or Aroclors are not listed separately. EPA's November 2002 surface water criteria document states that "This criterion applies to total PCBs" or the sum of all congener, isomer, or Aroclor analyses. EPA has established surface water criteria for both freshwater (0.014 ug/L) and saltwater (0.03 ug/L) chronic levels as well as a human health criterion value (0.000064 ug/L 'calculated'). The EPA drinking water MCL value, as well as the MA and NH groundwater standards, is currently set at 0.5.

In setting the effluent limits for PCBs, EPA-NE is taking into consideration the toxicity, persistence and potential for bio-accumulation of PCBs in the environment. Therefore, EPA-NE is proposing an effluent limitation for Total PCB based on the current human health criterion of 0.000064 ug/L. EPA-NE has historically set a compliance limitation of 0.5 ug/L, which is the typical minimal laboratory level using EPA Method 608. Based on past performance data of control technology, EPA-NE anticipates that discharges containing PCBs, can adequately be treated to "non-detection" levels using carbon adsorption. Thus, in the RGP, EPA-NE is also setting a compliance limit at 0.5 ug/L, the minimum level (ML) associated with federally approved test method (Method 608). See Appendix VI of the RGP.

**Proposed Effluent Limitation for Total Polychlorinated Biphenyls (PCBs)**
**Maximum Value = 0.000064 ug/L**
**Compliance Limit = 0.5 ug/L**

38. to 50.- **Metals Limitations**

a. Background - Many types of metals can be found in the ground and surface waters around New England. Concentrations of these metals vary widely depending on the geology and types of activities that occurred on the site. Often, metals such as cadmium, chromium, lead, mercury, nickel, and silver, build up to toxic concentrations through industrial contamination. Many of these metals have been found in groundwater at remediation and construction de-watering sites in the region, particularly in urban areas that have had long histories of industrial and municipal activity. For example, when runoff from older industrial or municipal sites contain metals in toxic concentrations, those metals often make their way into the ground and surface waters. Other metals, such as arsenic and iron, frequently build up by leaching out of naturally occurring deposits under reducing conditions in surrounding bedrock or soils.

Human exposure to metals can lead to a variety of health problems. Severe effects include reduced growth, cancer, organ damage, nervous system damage, and in extreme cases, death. Exposure to some metals, such as mercury and lead, may also cause development of auto-immunity, in which a person's immune system attacks its own cells. This can lead to joint diseases such as rheumatoid arthritis, and diseases of the kidneys,

circulatory system, and nervous system. The metals linked most often to human poisoning are lead, mercury, arsenic and cadmium. Other metals, including copper, zinc, and chromium, are actually required by the body in small amounts, but can also be toxic in larger doses.

Metals can be toxic to marine and freshwater organisms, as well as contaminating other plant and animal species. Often, water organisms are even more sensitive than humans to metals found in the water. Ultimately, metals can become concentrated in the human food chain. For instance, because of contaminated water, food sources such as vegetables, grains, fruits, fish and shellfish can become contaminated by accumulating metals from the soil and water used to grow them.

b. Selection of Parameters - To select the most appropriate metals to regulate in this general permit, EPA-NE reviewed a number of resources, including existing NPDES permits, as well as many applications and discharge monitoring reports submitted pursuant to approved site remediation projects, to determine which were most prevalent in discharges in MA and NH. The following 13 metals have been selected as parameters to be limited by this general permit:

**i) Antimony, ii) Arsenic, iii) Cadmium, iv) Chromium (III), v) Chromium (VI), vi) Copper, vii) Iron, viii) Lead, ix) Mercury, x) Nickel, xi) Selenium, xii) Silver,** and **xiii) Zinc.**

Not all of EPA's priority pollutant metals were selected for this permit, however. EPA did not select: **Beryllium, Thallium, Manganese,** and **Barium**. The most significant reasons for not including a particular metals include the infrequency in which it has been reported at sites, lower toxicity, and the probable removal of the contaminant along with other included chemicals by standard technology.

c. Selection of Limits - To establish appropriate effluent limitations for these selected metals, EPA-NE evaluated both the technology and water quality-based information currently available, including: the substantial information contained in monitoring reports from site remediation projects in MA and NH, the published technology information available on various EPA and other internet sites, and the various water quality and cleanup standards published by EPA and the States (see Appendix A of this Fact Sheet). In general, technology-based effluent limitations are sufficient to meet the most conservative water quality standards. The available information indicates that, with few exceptions, properly designed and operated treatment units, including: ion exchange, gravity settling, carbon adsorption, and chemical sequestration, can routinely achieve the effluent concentration limits set in this permit.

In fact, many of these metals have similar physical or chemical characteristics which are important in evaluating the appropriate control or removal technologies. EPA expects that several of the metals will be removed by employing the same control technologies.

However, as a precaution, applicants will be required to identify all metals found, or believed to be present, at a site and include them in the NOI for evaluation by EPA or the States.

As noted above, many of the metals limited by this permit are more toxic to aquatic organisms than to humans. Generally, the EPA human health criteria are set at higher concentrations than those needed to protect aquatic life based on the available published "lowest observed effects levels" (LOELs) for aquatic life (see Appendix A of this Fact Sheet). Therefore, for most of the metals, rather than basing the limits on the human health criteria, EPA has adopted the more conservative of the acute or chronic water quality criteria, as effluent limitations.

However, as with Benzene and several of the chlorinated volatile solvents, EPA-NE is proposing to establish technology based effluent limitations for Arsenic and Iron. These limits are slightly higher than the human health criteria. However, EPA-NE has evaluated the need for water quality-based effluent limitations for these contaminants and determined that except in rare circumstances, a health based limit is not necessary for the types of discharges covered by this permit for a number of reasons.

First, human health-based standards are typically developed to achieve certain risk-based concentrations based on long-term (e.g., 70 year or lifetime) exposure to the toxic material. However, the majority of discharges anticipated to be covered by the RGP are short duration (e.g., from a few days to 1-2 years). Second, the discharges covered by this permit are typically small volume discharges, designed with flow rates of a few gallons up to about 30 gallons per minute (approximately 40,000 gpd).

Third, because a general permit is designed for a variety of potential situations, the effluent limitations have been set conservatively assuming zero dilution. But low flow or zero flow waters are not typically used as sources of drinking water. Furthermore, discharges to public drinking water supply (Class A waters) are essentially excluded from coverage under the permit. Also, in many instances, there will be some flow or dilution available in the receiving water. While not formerly considered in setting these limits, EPA believes that the long term human health risks will be effectively mitigated by the combination of the technology based limits and the dilution found in typical receiving waters .

Finally, if any notice of intent (NOI) for discharge under this permit indicates unusual circumstances where the effluent limitation compounds may be problematic or human health criteria based limits are needed, EPA will issue an individual permit.

d. Consideration of Hardness - The metals parameters and limitations proposed in this general permit are being considered similar to the way that EPA sets metals limits in most individual permits where the dischargers are not subject to effluent guidelines (as with discharges covered by this permit). With such discharges, as well as other

discharges where a water quality based limit is needed, EPA uses its Recommended Criteria values for freshwater and saltwater, adjusted for hardness (where hardness dependent) and converts them to "Total Recoverable Metal" limits in the permit.

Generally, national water quality based criteria and effluent limits for metals are expressed at a hardness (H) value of 100 mg/L as calcium carbonate (CaCO3) in the receiving water. While this value may be appropriate for setting national criteria and limits, when setting more localized limits, e.g., in permits, the hardness value should be adjusted to reflect regional or local conditions. In determining the hardness dependent limits in this permit for dischargers in MA and NH, EPA has calculated the base limit for each metal using the current chronic criteria level for both freshwater and saltwater based on the National Criteria value. EPA has then adjusted the metals limits to an assumed average hardness of 50 mg/L as CaCO3 for sources in MA and 25 mg/L as CaCO3 for sources in NH. See Table VIII below and Appendicies III and IV of the RGP. For coverage under the RGP, the limits calculated at these assumed hardness values apply.

The following is an explanation of the calculation that EPA used to determine the total recoverable limits for metals at the assumed hardness values. The Freshwater (FW) effluent limitations for metals included in Appendix III of the RGP for metals are presented as "Total Recoverable Metals" after application of appropriate conversion factors from dissolved metal at zero dilution. For "hardness dependent" metals, the values have been assumed at Hardness (H) = 50 mg/l for sources located in Massachusetts and H = 25 mg/l for sources located in New Hampshire. The water quality criterion values are the latest EPA published values as shown in Appendix A of the Fact Sheet and contained in EPA publication, "National Recommended Water Quality Criteria: 2002" (822-R-02-047), November 2002.

Additional information can be obtained at EPA and the States' web sites, including:
**http://www.gencourt.state.nh.us/rules/env-ws1700.html**
**http://www.mass.gov/dep/bwp/iww/files/314cmr4.htm**
**http://www.epa.gov/ost/standards/wqslibrary/**

For the assumed receiving water hardness concentrations in MA and NH, the RGP effluent limitations shown in Appendix III for metals have been adjusted according to the formulas provided in EPA's water quality publications as follows:

Chronic Criteria (CCC) - Used for RGP effluent limitations

**CCC (dissolved) = exp {mc[ln(hardness)]+bc}**

**Where: CCC = Criteria Continuous Concentration**

**mc and bc = Pollutant-specific constants for calculating freshwater dissolved metals criteria for those metals which are**

**hardness dependent**

**hardness = Receiving water column hardness in mg/l as $CaCO_3$**

Total Recoverable Metal - EPA is required by 40 CFR Section 122.45(c) to express NPDES permit limitations as "total recoverable metal." In the following discussion, a conversion factor (CF) was applied to the dissolved metal criteria value in order to convert it to the total recoverable metal limits that appear in Appendix III of the RGP. See EPA publication, "National Recommended Water Quality Criteria: 2002" (822-R-02-047), November 2002, for applicable conversion factors.

**Total recoverable metal concentration = (Dissolved concentration)/(CF)**

e. Consideration of Dilution Factors - Under the RGP, dilution factors may be applied to the discharge concentrations of **metals only** and **only for discharges to freshwater**. Before applying a dilution factor, dischargers must first determine if the undiluted effluent would have the "reasonable potential" for violation of the applicable WQS and whether there is a need for additional treatment specific to metals removal. In the NOI, the permit applicant must select the appropriate parameters and, if necessary, an appropriate DF, where discharges of metals require effluent limits.

To facilitate the calculation of metals limits at various dilution ranges and hardness values of receiving waters, Appendix IV of the RGP contains the total recoverable metals limitations at selected dilution ranges and hardness values. Applicants must follow the two step process below to determine if dilution for metals is appropriate and if so, which limit in Appendix IV of the RGP applies to their discharge. EPA and MA or NH will approve or disapprove of the proposed effluent limitations during the application (NOI) process.

***Step 1: Calculate Reasonable Potential*** - The applicant must evaluate all metals known or suspected to be present in the discharge subject to this permit. Additionally, certain "naturally occurring" metals such as dissolved and/or total Iron must also be evaluated since one of the primary purposes of the RGP is to control the discharge of contaminated ground waters to surface water which may have a lower background concentration of that metal in the water column. Also, in cases where the waters to be discharged may be mixed with contaminated soils such as at excavation sites, the applicant should also consider the mass concentrations (ug/kg) of metals in the soil and the potential for additional contamination of the water being managed due to soil/water mixing. Analysis for soil contamination is typically conducted at excavation sites due to state hazardous waste requirements for soil disposal.

Based on the concentration of each metal, an initial evaluation assuming "zero" or "no" dilution in the receiving water should be performed. Examples of zero dilution include extremely low flow or intermittent streams, wetlands, ditches or other conveyances to

free flowing surface waters. The metal concentrations in the untreated (intake) waters should then be compared to the limits calculated at zero dilutions, i.e., the limits contained in Appendix III of the RGP. Metals with concentrations below these "baseline" concentrations may be excluded from further evaluation and are not subject to further permit limitations or monitoring requirements.

***Step 2: Calculate Dilution Factor*** - Proposed discharges with metals concentrations exceeding the zero dilution baseline limits in Appendix III must then be evaluated by calculating a dilution factor (DF) in the receiving water. For sites/facilities located in Massachusetts, the applicant will need to calculate a dilution factor for metals. For sites/facilities in New Hampshire, the applicant will need to work with the NHDES in order to calculate the dilution factor. The dilution factor is then used to determine which effluent limit in Appendix IV of the permit applies. The basic calculation is as follows:

For facilities in NH:

**DF = {(Qd + Qs)/Qd} 0.9**

**Where:** **DF = Dilution Factor**

**Qd = Permitted flow rate of the discharge in cubic feet per second (cfs) (1.0 gpm = .00223 cfs)**

**Qs = Receiving water 7Q10 flow where,**

**7Q10 = The minimum flow for 7 consecutive days with a recurrence interval of 10 years**

**0.9 = Allowance for reserving 10% of the assets in the receiving stream as per Chapter ENV-Ws 1700, Surface Water Quality Regulations**

**For Example:**
**a) A 100 gpm discharge into a stream with 7Q10 = 1 cfs : DF = 4.9**
**b) A 50 gpm " " " = 1 cfs : DF = 8.7**
**c) A 25 gpm " " " = 3 cfs : DF = 47.9**
**d) A 45 gpm " " " = 10 cfs : DF = 87.9**

And in Massachusetts:

**DF = (Qd + Qs)/Qd**

**Where:** **DF = Dilution Factor**
**Qd = Maximum flow rate of the discharge in cubic feet per second (cfs) (1.0 gpm = .00223 cfs)**

**Qs = Receiving water 7Q10 flow where,**
**7Q10 = The minimum flow for 7 consecutive days with a recurrence interval of 10 years**

**For Example:**
**a) A 100 gpm discharge into a stream with 7Q10 = 1 cfs : DF = 5.5**
**b) A 50 gpm " " " = 1 cfs : DF = 10**
**c) A 25 gpm " " " = 3 cfs : DF = 55**
**d) A 45 gpm " " " = 10 cfs : DF = 100.**

The 7Q10 for a receiving water may be estimated by use of available information such as nearby USGS stream gaging stations directly or by application of certain "flow factors," using historic streamflow publication information, calculations based on drainage area, information from state water quality offices, or other means. In many cases the States of MA and NH have calculated 7Q10 information using "flow factors" for a number of streams in the state. The source of the low flow value(s) used by the applicant must be included on NOI application form. Flow data can also be obtained from web applications such as STREAMSTATS (for MA) located at: http://ma.water.usgs.gov/streamstats/. As described above, for sites in New Hampshire, the applicant must contact the State for this information.

Once the DF is calculated, the corresponding maximum effluent limitations for the various metals can be obtained from the appropriate DF range column on Appendix IV of the RGP. If the intake (untreated) water concentrations are less than the value given, no further limitations or monitoring for that metal is required. All other metals exceeding the maximum value must be treated or otherwise controlled to less than the limit prior to discharge. Due to the variability of site information obtained from studies, monitoring wells, or other up-front testing, the operator must assume a conservative approach and include parameters for limitation and monitoring which may exceed the maximum limits during the life of the discharge. The person signing the NOI application form will be responsible for insuring the accuracy of this information.

In order to assist the applicants in determining the applicable metals limits, in the Appendix IV of the RGP, we have listed the freshwater metal limits at the most common dilution ranges, as well as a "Ceiling Value" never to be exceeded, regardless of dilution. The ceiling value limits are generally based on published effluent guidelines (e.g., metal finishing point source category - 40 CFR Part 433; centralized waste treatment - 40 CFR Part 437; landfills - 40 CFR Part 455; etc.), where technology based limits have been set by regulation. These ceiling values are often more stringent than the limit calculated at higher dilutions but given the existence of the regulatory limits, EPA believes that these ceiling values are achievable using standard technology.

f. Description and Rationale for Limits - Below is a brief description of and limit for each of the selected metals:

**Antimony** - EPA has set the antimony limits in this general permit considering a number of factors, including: the water quality criteria and the surface water limits in MA and NH (see Appendix A of this Fact Sheet ). EPA has not published fresh water or salt water acute or chronic quality criteria for antimony. But, EPA's human health criteria for antimony are 5.6 ug/L (water and organism) and 640 ug/L (organism only). In New Hampshire, the surface water standards for antimony are 9,000 ug/L (acute) and 1,600 ug/L (chronic) for freshwater. NH's human health criteria are 14 ug/L (water and organism) and 4,300 ug/L (organism only). Based on the performance of control technology currently in use, EPA is setting the total recoverable limitation for antimony at 5.6 ug/L, the national human health criterion for surface water.

**Arsenic** - EPA has set the arsenic limits in this general permit considering a number of factors, including: the water quality criteria, the surface water limits in MA and NH (see Appendix A of this Fact Sheet), and other available information. EPA's water quality criteria and the surface water standards for arsenic in NH are 340 ug/L (freshwater acute), 150 ug/L (freshwater chronic), 69 ug/L (saltwater acute), and 36 ug/L (saltwater chronic). However, based on the performance of the types of technology currently in use, EPA is setting a technology based limit at 10 ug/L for freshwater. For saltwater, the permit limit is 36 ug/L, based on the saltwater chronic criteria value.

**Cadmium** - EPA has set the cadmium limits in this general permit considering a number of factors, including: the water quality criteria, the MCL, and the existing limits in MA and NH (see Appendix A of this Fact Sheet). EPA's water quality criteria for cadmium are 2.0 ug/L (freshwater acute at hardness of 100 mg/L CaCO3), 0.25 ug/L (freshwater chronic at hardness of 100 mg/L CaCO3), 40 ug/L (saltwater acute), and 8.8 ug/L (saltwater chronic). NH's surface water standards for cadmium are 0.95 ug/L (freshwater acute at a hardness of 25 ug/L CaCO3), 0.8 ug/L (freshwater chronic at a hardness of 25 ug/L CaCO3), 42 ug/L (saltwater acute), and 9.3 ug/L (saltwater chronic).

Using the most conservative of the criteria, EPA is basing the limits for cadmium on the fresh and salt water chronic criteria values. Since cadmium is hardness dependent, in this permit, EPA has set the total recoverable metal limitation for cadmium separately for MA and NH due to different average hardness values for receiving waters. Based on the water quality criteria for chronic exposure, for discharges to freshwater in MA, the limit is 0.2 ug/L (based on a hardness of 50 ug/L CaCO3) and for discharges to freshwater in NH, the limit is 0.8 ug/L (based on a hardness of 25 ug/L CaCO3). For saltwater, the limit for MA is 8.9 ug/L and 9.3 ug/L for NH.

**Chromium** - EPA has set the chromium limits in this general permit considering a number of factors, including the water quality criteria, the MCL, and the existing limits in MA and NH (see Appendix A of this Fact Sheet). EPA's water quality criteria for chromium III (trivalent) is 570 ug/L (freshwater acute at hardness = 100 mg/L CaCO3) and 74 ug/L (freshwater chronic at hardness = 100 mg/L CaCO3). EPA does not have criteria for chromium III in saltwater. For chromium VI (hexavalent), EPA's water

quality criteria and NH's surface water standards are 16 ug/L (freshwater acute), 11 ug/L (freshwater chronic), 1100 ug/L (saltwater acute), and 50 ug/L (saltwater chronic). In MA and NH, the groundwater standard for chromium III is 100 ug/L and in MA, the groundwater standard for chromium VI is 50 ug/L.

Since the concentration of chromium III, or $Cr^{+3}$, is dependent on the hardness of the receiving waters, in this permit, EPA is setting the total recoverable metal limitation for $Cr^{+3}$ in freshwater separately for MA and NH due to different assumed average hardness values for receiving waters. For discharges to freshwater in MA, the $Cr^{+3}$ limit is 48.8 ug/L (based on a hardness of 50 mg/L CaCO3). For discharges to freshwater in NH, the $Cr^{+3}$ limit is 27.7 ug/L (based on a hardness of 25 mg/L CaCO3). These limits are based on EPA's chronic water quality criteria for $Cr^{+3}$. EPA does not currently have saltwater criteria. Therefore, for saltwater in both States, the $Cr^{+3}$ limit in this permit is set at 100 ug/L, based on the performance of current technology.

Since the concentration of chromium (VI), or $Cr^{+6}$, is not dependent on the hardness of the receiving waters, EPA has set the same $Cr^{+6}$ limit for both MA and NH. Based on the national recommended water quality criteria for chronic exposure, EPA is setting the total recoverable limits for $Cr^{+6}$ at 11.4 ug/L for freshwater and 50.3 ug/L for saltwater.

**Copper** - EPA has set the copper limits in this general permit considering a number of factors, including: the water quality criteria, the MCL, and the existing limits in MA and NH (see Appendix A of this Fact Sheet). EPA's water quality criteria for copper are 13 ug/L (freshwater acute at hardness = 100 mg/L CaCO3), 9 ug/L (freshwater chronic at hardness = 100 mg/L CaCO3), 4.8 ug/L (saltwater acute), and 3.1 ug/L (saltwater chronic). Using the most conservative of the criteria, EPA is basing the limits for copper on the fresh and salt water chronic criteria values. Since the concentration of copper (Cu) is dependent on the hardness of the receiving waters, in this permit, EPA is setting the total recoverable metal limitation separately for MA and NH due to different assumed average hardness values for their receiving waters. For discharges to freshwater in MA, the Cu limit for this permit is 5.2 ug/L (based on a hardness of 50 mg/L CaCO3). For discharges to freshwater in NH, the Cu limit is 2.8 ug/L (based on a hardness of 25 mg/L CaCO3). For saltwater in both States, the Cu limit is 3.7 ug/L.

**Lead** - EPA has set the lead limits in this general permit considering a number of factors, including: the water quality criteria, the MCL, and the limits in MA and NH (see Appendix A of this Fact Sheet). EPA's water quality criteria for lead are 65 ug/L (freshwater acute at hardness = 100 mg/L CaCO3), 2.5 ug/L (freshwater chronic at hardness = 100 mg/L CaCO3), 210 ug/L (saltwater acute), and 8.1 ug/L (saltwater chronic). Using the most conservative of the water quality criteria, EPA is basing the limits for lead on the fresh and salt water chronic criteria values. Since the concentration of Pb is dependent on the hardness of the receiving waters, in this permit, EPA is setting the total recoverable metal limitations separately for MA and NH due to different assumed average hardness values for their receiving waters. For discharges to freshwater

in MA, the Pb limit is 1.3 ug/L (based on a hardness of 50 mg/L CaCO3). For discharges to freshwater in NH, the Pb limit is 0.5 ug/L (based on a hardness of 25 mg/L CaCO3). For saltwater in both States, the Pb limit is 8.5 ug/L.

**Mercury** - EPA has set the mercury limits in this general permit considering a number of factors, including: the water quality criteria, the MCL, and the limits in MA and NH (see Appendix A of this Fact Sheet). EPA's water quality criteria for mercury are: 1.4 ug/L (freshwater acute), 0.77 ug/L (freshwater chronic), 1.8 ug/L (saltwater acute), and 0.94 ug/L (saltwater chronic). While NH has human health criteria of 0.05 ug/L (water only) and 0.051 ug/L (water + organism) which were based on EPA's previous criteria, EPA published new human health criteria for organic mercury (methyl-mercury) as of January 8, 2001 as 0.3 mg/kg. At that time, EPA's prior human health criteria were withdrawn. Therefore, rather than basing the mercury limit on the withdrawn criteria, EPA is proposing a limit based on the national recommended water quality criteria chronic values expressed as the total recoverable mercury at 0.9 ug/L for freshwater and 1.1 ug/L for saltwater.

**Nickel** - EPA has set the nickel limits in this general permit considering a number of factors, including: the water quality criteria, the MCL, and the limits in MA and NH (see Appendix A of this Fact Sheet). EPA's water quality criteria for nickel are 470 ug/L (freshwater acute at hardness = 100 mg/L CaCO3), 52 ug/L (freshwater chronic at hardness = 100 mg/L CaCO3), 74 ug/L (saltwater acute), and 8.2 ug/L (saltwater chronic). Using the most conservative of the criteria, EPA is basing the limits for nickel on the fresh and salt water chronic criteria values. Since the concentration of Ni is dependent on the hardness of the receiving waters, in this permit, EPA is setting the total recoverable metal limitations separately for MA and NH due to different assumed average hardness values for their receiving waters. For discharges to freshwater in MA, the Ni limit in this permit is 29.0 ug/L (based on a hardness of 50 mg/L CaCO3). For discharges to freshwater in NH, the Ni limit in this permit is 16.1 ug/L (based on a hardness of 25 mg/L CaCO3). For saltwater in both States, the Ni limit is 8.2 ug/L.

**Selenium** - EPA has set the selenium limits in this general permit considering a number of factors, including: the water quality criteria, the MCL, and the limits in MA and NH (see Appendix A of this Fact Sheet). EPA's water quality criteria for selenium are 5.0 ug/L (freshwater chronic), 290 ug/L (saltwater acute), and 71 ug/L (saltwater chronic). EPA does not have an acute freshwater criteria for selenium. Based on the most conservative national recommended water quality criteria, i.e., the chronic values, EPA is setting the total recoverable limits for selenium at 5.0 ug/L for freshwater and 71 ug/L for saltwater.

**Silver** - EPA has set the silver limits in this general permit considering a number of factors, including: the water quality criteria, the MCL, and the limits in MA and NH (see Appendix A of this Fact Sheet). EPA's water quality criteria for silver are 3.2 ug/L (freshwater acute at hardness of 100 ug/L CaCO3) and 1.9 ug/L (saltwater acute). EPA

has not published water quality criteria for chronic exposure to silver. Using the most conservative of the criteria, i.e., the fresh and salt water acute values, EPA is basing the limits for silver on the acute criteria values. Since the concentration of silver is dependent on the hardness of the receiving waters, in this permit, EPA is setting the total recoverable silver limitations separately for MA and NH due to different assumed average hardness values of their receiving waters. For discharges to freshwater in MA, the silver limit in the RGP is 1.2 ug/L (based on a hardness of 50 mg/L CaCO3). For discharges to freshwater in NH, the silver limit in the RGP is 0.4 ug/L (based on a hardness of 25 mg/L CaCO3). For saltwater in both States, the silver limit is 2.2 ug/L.

**Zinc** - EPA has set the zinc limits in this general permit considering a number of factors, including: the water quality criteria, the MCL, and the limits in MA and NH (see Appendix A of this Fact Sheet). EPA's water quality criteria for zinc are 120 ug/L (freshwater acute at hardness of 100 mg/L CaCO3), 120 ug/L (freshwater chronic at hardness of 100 mg/L CaCO3), 90 ug/L (saltwater acute), and 81 ug/L (saltwater chronic). Using the most conservative of the criteria, EPA is basing the limits for zinc on the fresh and salt water chronic criteria values. Since the concentration of zinc is dependent on the hardness of the receiving waters, in this permit, EPA is setting the total recoverable metal limitations separately for MA and NH due to different assumed average hardness values for their receiving waters. For discharges to freshwater in MA, the zinc limit in the RGP is 66.6 ug/L (based on a hardness of 50 mg/L CaCO3). For discharges to freshwater in NH, the zinc limit in the RGP is 37 ug/L (based on a hardness of 25 mg/L CaCO3). For saltwater in both States, the zinc limit is 85.6 ug/L.

**Iron** - EPA-NE has reviewed many treatment system operational reports and monitoring reports which outline common treatment system operation and maintenance problems which develop as a result of high levels of naturally occurring iron in groundwater in New England. Iron in groundwater (ferrous $Fe^{+2}$) will oxidize to insoluble ferric hydroxide ($Fe^{+3}$) upon mixing and exposure to air. As $Fe^{+3}$, it will foul the treatment units, cause growth of iron bacteria in the units, and may discolor the effluent or cause localized sediment deposits in storm drains or receiving waters.

Some operators add chemical sequestering agents specifically developed to keep the ferrous iron in solution through the treatment units and into the discharge due to the added expense of pre-treatment and iron removal. Since most of the discharges covered by the RGP are from contaminated ground waters which may contain elevated iron concentrations, two issues affecting surface water quality need to be addressed: 1) transfer of high iron content ground water to the surface water (e.g. system pass-thru) and 2) impacts on treatment efficiency of the system being used to control the primary chemicals of concern in the discharge.

EPA-NE recognizes that iron compounds are generally not toxic in the environment, however, excessive amounts may cause or contribute to violations of water quality standards including color, turbidity, solids, and odor, as well as fouling of the discharge

treatment systems. EPA's and the States' freshwater chronic criteria for iron is 1,000 ug/l and the human health criteria for the consumption of water and organisms is 300 ug/l. In setting the limit for this permit, however, EPA has considered the fact that iron may be "naturally occurring" and that treatment systems are designed primarily for control of more toxic pollutants caused by human activities. Further, EPA has concluded that the iron limit in the RGP must, at a minimum, provide for the proper operation and maintenance of the kinds of pollution control systems that are anticipated at other clean up activities covered by the permit.

Based on the information available, EPA-NE is setting a water quality based iron limit of 1,000 ug/l (1 mg/L).

**Table VIII - Proposed Effluent Limitation for Metals:**

| **Parameter** | **Maximum Value (ug/L)** | | | |
|---|---|---|---|---|
| | **@ H = 50 mg/L CaCO3 (for dis-charges in MA)** | | **@ H = 25 mg/L CaCO3 (for dis-charges in NH)** | |
| **38. Antimony** | **5.6** | | **5.6** | |
| **39. Arsenic** | **FW[4]= 10** | **SW[5] = 36** | **FW= 10** | **SW = 36** |
| **40. Cadmium** | **FW = 0.2** | **SW = 8.9** | **FW= 0.8** | **SW = 9.3** |
| **41. Chromium III (trivalent)** | **FW = 48.8** | **SW = 100** | **FW= 27.7** | **SW = 100** |
| **42. Chromium VI (hexavalent)** | **FW = 11.4** | **SW = 50.3** | **FW= 11.4** | **SW = 50.3** |
| **43. Copper** | **FW = 5.2** | **SW = 3.7** | **FW= 2.8** | **SW = 3.7** |
| **44. Lead** | **FW = 1.3** | **SW = 8.5** | **FW= 0.5** | **SW = 8.5** |
| **45. Mercury** | **FW = 0.9** | **SW = 1.1** | **FW= 0.9** | **SW = 1.1** |
| **46. Nickel** | **FW = 29.0** | **SW = 8.2** | **FW= 16.1** | **SW = 8.2** |
| **47. Selenium** | **FW = 5.0** | **SW = 71** | **FW= 5.0** | **SW = 71** |
| **48. Silver** | **FW = 1.2** | **SW = 2.2** | **FW= 0.4** | **SW = 2.2** |
| **49. Zinc** | **FW = 66.6** | **SW = 85.6** | **FW= 37** | **SW = 85.6** |
| **50. Iron** | **1,000** | | **1,000** | |

[4]FW = freshwater.

[5]SW = saltwater.

## C. Applicability of Specific Chemical Effluent Limits

Permittees must demonstrate compliance with all of the applicable parameters specified in this permit, except as provided for in Section VIII, including Table XI, below.

## VII. Water Quality Related Requirements

Provisions in the MA and NH state surface water quality standards developed under Section 303(c) of the CWA and 40 CFR Part 131 provide minimum criteria to insure water quality standards are achieved and maintained for classes of waters designated by the State (see Section I.D.4. of this Fact Sheet). EPA-NE has included certain of these criteria which are directly applicable to the types of discharges covered by the RGP as special conditions in the permit. The water quality criteria are found in 314 CMR 4.00, Massachusetts Surface Water Quality Standards and Chapter 1700, New Hampshire Surface Water Quality Regulations. EPA-NE has routinely required narrative water quality provisions at site remediation projects in MA and NH and has determined that it is appropriate to carry these provisions forward into the RGP. These provisions include:

## A. Solids, Color, and Turbidity

While the RGP contains numeric effluent limitations for total suspended solids (TSS), there are no numeric limits on color or turbidity in the RGP. EPA-NE has determined that narrative requirements are sufficient to insure that discharges covered by the permit do not violate state water quality standards.

## B. pH

The pH of a discharge water is an indicator of the relative acidity or alkalinity of that water. The States have established numeric water quality criteria for pH for classes of surface water to protect sensitive species. It has been common practice for EPA and the States to establish effluent limitations for pH equal to the ranges (low-high) established for the class of receiving water. In Massachusetts, the operator may demonstrate that a lower or higher pH may be discharged within a narrow set of conditions but in no case outside of the range 6.0 - 9.0 s.u.

The pH requirements established as common conditions for all categories of dischargers covered by the RGP are shown in Table IX below.

**Table IX: pH Limitations**

| State | Water Classification | pH Limitation |
|---|---|---|
| Massachusetts | Class A (Water Supply) | Discharge Prohibited [6] |
| | Class A and B | 6.5-8.3 S.U. |
| | Class SA | 6.5-8.5 S.U. |
| New Hampshire | Class A | Discharge Prohibited[7] |
| | Class B | 6.5-8.0 S.U. |

## C. Total Residual Chlorine (TRC)

Chlorine compounds may be added during certain types of activities covered by the RGP or in other cases, as necessary for maintaining treatment systems. Among other activities, chlorine compounds may be used in well rehabilitation, pipeline and tank cleaning and hydrostatic testing, as well as for algae and bacteria control in treatment units. Activities covered by the RGP do not manage sanitary wastes or domestic sewage, thus chlorine is not routinely used as a disinfectant, however in certain situations such as at construction sites, incidental domestic sewage may be encountered in which case disinfection may be required. In cases where chlorine or chlorine compounds are added to the waters being managed under the RGP, de-chlorination of the effluent would be required.

## D. Iron Fouling, Deposition, and Related Water Quality Issues

EPA-NE has reviewed many operational and monitoring reports which describe common operation and maintenance problems which develop as a result of high levels of naturally occurring iron in groundwater in New England. In general, iron in groundwater (ferrous $Fe^{+2}$) oxidizes to insoluble ferric hydroxide ($Fe^{+3}$) on mixing and exposure to air and fouls the treatment units, causes growth of iron bacteria in the units, and may discolor the effluent or cause localized sediment deposits in storm drains or receiving waters. To avoid this problem, some operators add chemical sequestering agents specifically developed to keep the ferrous iron in solution through the treatment units and into the discharge. From a control technology standpoint, the concentration of iron in the influent is also important to consider. High concentrations of iron can adversely affect the

[6] Discharges to Outstanding Resource Waters in Massachusetts, as defined by 314 CMR 4.06(3), including Public Water Supplies (314 CMR 4.06(1)(d)1.) which have been designated by the state as Class A waters, are prohibited, unless a variance is granted by MADEP under 314 CMR 4.04(3)(b).

[7] Discharges to Outstanding Resource Waters in New Hampshire, as designated by RSA 483:7-a are prohibited, unless allowed under Env-Ws 1708.05(b).

performance of the equipment designed to remove the other hazardous compounds (e.g., petroleum, volatile organic compounds, other heavy metals, etc.) of the discharge.

Since most of the discharges covered by the RGP are from contaminated ground waters which may contain elevated iron concentrations, two issues affecting surface water quality need to be addressed: i) the transfer of high iron content ground water to the surface water (e.g. system pass-thru) and ii) the impacts on treatment efficiency of the system being used to control the primary chemicals of concern in the discharge.

EPA-NE recognizes that iron compounds are generally not toxic in the environment. However, excessive amounts of iron may cause or contribute to violations of water quality standards including color, turbidity, solids, and odor. The EPA has considered the fact that iron may be "naturally occurring" and that treatment systems are designed primarily for control of more toxic pollutants in balancing the need for an effluent limit for total iron versus the added costs of treatment and the impact on receiving water quality.

Based on the water quality standards and criteria, as well as technology considerations and the information available to the Region from discharge reports, the RGP contains a number of iron-specific requirements. First, the permit requires monitoring information regarding dissolved iron concentrations in the influent and effluent. Second, the permittee is required to submit Material Safety Data Sheets (MSDS) for chemical additives used to control iron fouling prior to use. Finally, the RGP sets an iron limit of 1,000 ug/L (ppb) as an effluent limitation for total recoverable iron for discharges to receiving waters at zero to five dilutions. At five dilutions or more, the RGP sets the discharge limit for iron at 5,000 ug/L since an iron concentration greater than 5,000 ug/L (5 mg/L) causes iron fouling of the control system.

## E. Heat

In most cases, the activities covered by the general permit are not expected to raise the temperature of the receiving water, however, there are groundwater remediation technologies that heat the water prior to treatment. Therefore, EPA-NE is including a daily maximum temperature limit for discharges from the activities covered by the RGP. The applicable temperature limit depends on whether the receiving water is a warm or cold water fishery, i.e., 83 degrees Fahrenheit for warm water fisheries or 68 degrees Fahrenheit for cold water fisheries. This approach is based on the limits set in water quality standards and EPA-NE's general permit for non-contact cooling water (FR 65, No. 80, pp. 24195, April 25, 2000).

Additionally, for sites located in Massachusetts, the RGP includes a maximum change in temperature limit as well. See Table X below.

**Table X: Maximum Change in Temperature for Discharges under the RGP**

| Class of Water Body | Type of Fishery or Subcategory | MaximumChange in Temperature |
|---|---|---|
| **A** | | **1.5 °F** |
| **B** | **Warm Water** | **5 °F** |
| | **Cold Water and Lakes/Ponds** | **3 °F** |
| **SA** | **Coastal** | **1.5 °F** |
| **SB** | **June - October** | **1.5 °F** |
| | **October - June** | **4 °F** |

## F. Use of Chemical Additives

Chemical agents are commonly utilized for enhancement of wastewater treatment, for the control of undesirable conditions caused during treatment, or due to the chemical makeup of the water being treated. For example, chemical additives are used to control foaming, algae and bacteria growth, and are added to control "naturally occurring" dissolved iron or other minerals in groundwater which may foul treatment systems, discolor the discharge, or cause sediments in the receiving water. While many additives are advertized as being "non-toxic" or "biodegradable," there are instances where specific compounds in the additive may be unacceptable for discharge to certain receiving waters.

EPA-NE has reviewed many requests for chemical addition along with various cover letters, monitoring reports and other information submitted by consultants for use of chemical additives pursuant to approved site remediation projects in MA and NH. Typically EPA-NE has required the Material Safety Data Sheets (MSDS) for the proposed product to be submitted for review prior to approving chemical additives. When filing the NOI for coverage under this permit, the operator must identify the chemical additives being used or proposed to be used, the purpose of use of the additive, and attach the MSDS sheet(s) for the additive(s). EPA may request further information regarding the chemical composition of the additive, potential toxic effects, or other information to insure that approval of the use of the additive will not cause or contribute to a violation of state water quality standards.

Approval of coverage under the RGP will constitute approval of the use of the chemical additive(s) that are described in the Notice of Intent (NOI). If coverage of the discharge under the RGP has already been granted and the use of a chemical additive becomes necessary, the operator must submit a Notice of Change (NOC) (see Appendix V of the RGP).

## G. Antidegradation Provisions

The conditions of the permit reflect the goal of the CWA and EPA to achieve and maintain water quality standards. The environmental regulations pertaining to the State Antidegradation Policies which protect the States' surface waters from degradation of water quality are found in the following provisions: Massachusetts Water Quality Standards 314 CMR 4.04 Antidegradation Provisions and New Hampshire RSA 485-A:8, VI Part Env-Ws 1708 "Antidegradation."

This general permit does not apply to any new or increased discharge to receiving waters unless the discharge is shown to be consistent with the States' antidegradation policies. This determination shall be made in accordance with the appropriate State antidegradation implementation procedures for this general permit. EPA will not authorize discharges under the general permit until it receives a favorable antidegradation review and certification of this general permit from the States. EPA has formally requested each State to make an antidegradation certification determination.

## H. New Dischargers to Water Quality-Impaired or Water Quality-Limited Receiving Waters

Upon issuance of this permit, all existing and new dischargers will be subject to review to determine whether the discharge is to a segment of a receiving water which is water quality "impaired" or "limited". Under Section 303(d) of the CWA, the States are periodically required to list all State waters that are not currently meeting their water quality standards. These waters are considered "impaired". States may also be required to develop a "Total Maximum Daily Load" or TMDL for a waterbody which is a mathematical approach to allocating pollutant loads among a number of dischargers along an impaired water, the sum of which is less than the maximum load allowed to ensure the standards are met. A water where a TMDL is available or planned is considered water quality limited. The adopted water quality standards, approved by EPA, for MA are contained in 314 CMR 4.00 and NH in CHAPTER Env-Ws 1700.

The CWA Section 303(d) list for each State provides information on the water body or segment of a waterbody which is impaired along with the pollutant or class of pollutants for which the water is listed. Waters can also be listed for failing to meet minimum flow requirements to support a balanced species population. As part of the Notice of Intent for coverage under this permit, applicants will be required to determine whether the proposed receiving water or segment has been listed on the state's 303(d) list and whether any pollutant proposed to be discharged is indicated as a cause for listing (see the NOI instructions in Appendix V of the RGP of the NOI form).

EPA anticipates that due to the nature of the contaminants regulated by this permit discharges proposed to impaired receiving waters typically will not be the same contaminants causing the impairment (e.g. those causing low dissolved oxygen, nutrients,

etc.). EPA-NE further believes that compliance with the effluent limitations in this permit will not cause or significantly add to violation of any state water quality standard.

Additionally, 40 CFR Section 122.4(i) requires a new discharger or one who started discharging after August 13, 1979, to demonstrate compliance with this section for any TMDL which has been completed for the water quality-limited segment. Applicants will be required to indicate on the NOI whether a TMDL has been prepared and for which parameters. However, EPA-NE believes that only in rare instances will the contaminants of concern covered by this permit be subject to a TMDL.

Further information regarding the MA and NH 303(d) listings, TMDLs, and water quality standards for receiving waters can be obtained from the state's web sites at: http://www.mass.gov/dep/brp/wm/tmdls.htm, for MA and http://oaspub.epa.gov/waters/state_rept.control?p_cycle=1998&p_state=NH,.for NH or by contacting the state agency as indicated in the NOI.

## I. State Water Quality Certification (Section 401)

Section 401 of the CWA provides that no Federal license or permit, including NPDES permits, to conduct any activity that may result in any discharge into navigable waters shall be granted until the State in which the discharge is located certifies that the discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA. Upon receipt of all comments and finalization of this permit, EPA will request state certification from Massachusetts and New Hampshire that this permit will comply with these provisions. In addition, EPA and the Commonwealth of Massachusetts will jointly issue the final permit. For lands held by federally recognized tribes, EPA has provided the necessary certification. Currently, the only federally recognized tribe is the Wampanoag Tribe of Gay Head (Aquinnah) on the island of Martha's Vineyard.

## VIII. Monitoring Recordkeeping, and Reporting Requirements

### A. Common Requirements

**1. General** - Part I of the permit contains a number of general requirements that apply to all permittees covered under the general permit. For example, all facilities covered by the final general permits are required to monitor pH, temperature, and flow. Additionally, all permittees are required to monitor on a monthly basis their influent and effluent and summarize the data on a monthly basis. These records must be kept on site and available for inspection. Either EPA or the State may request copies of the data or summary sheets as well. Part II of the RGP also requires records of: i) the date, exact location, and time of sampling or measurements; ii) the name of the individual(s) who performed the sampling or measurements; iii) the date the analyses were performed; iv) the name of the individual(s) who performed the analysis; v) the analytical techniques or

methods used; and vi) the results of such analysis.

**2. Category Specific Limits and Monitoring** - Under the RGP, permittees must monitor their outfall discharge effluent and demonstrate compliance with the applicable parameters specified in Table XI below and Appendix III of the RGP. However, the permittee may certify that certain chemicals listed in Appendix III of the RGP are "not present" in the discharge. Permittees do not need to monitor for chemicals for which they have certified as "not present." The certification that a chemical is "not present"must be based on the results from at least one sample. Additionally, if the discharge continues for more than 6 months, the permittee must re-certify that the chemicals are not present by evaluating a minimum of one additional sample. Such certifications must be signed in accordance with 40 CFR Section 122.22 and accompany the NOI (or the NOC if the certification is made after the initial effluent testing is completed).

Table XI below provides a matrix of the presumptive chemical effluent limits and monitoring requirements that permittees must comply with for the sub-categories covered by the RGP. On the NOI, applicants must indicate which of the sub-categories their discharges fall within and monitor all of the chemicals related to that category, unless the chemical is certified as "not present." If the site falls within more than one sub-category, the permittee will be required to monitor for all sub-category specified pollutants unless certified as "not present" in the NOI and subsequent DMRs.

If the site falls within one of the categories but is known to contain additional chemicals not specified in the list of presumptive chemicals but listed in Appendix III of the RGP, the permittee must also monitor for the known chemicals. If the applicant believes that pollutants exist in addition to those listed in Appendix III of the RGP of the permit, the applicant must describe those contaminants on the NOI. Subsequently, the Director will decide if the RGP can apply or if the individual permit is necessary.

Regardless of any certification of chemicals not present, the Director may provide written notice to any facility, including those otherwise exempt, requiring monitoring of specific parameters. Any such notice will briefly state the reasons for the monitoring, parameters to be monitored, frequency and period of monitoring, sample types, and reporting requirements. Furthermore, as required in 40 CFR Section 122.42, in addition to reporting requirements specified in the permit, permittees must notify the Director as soon as they have reason to believe that any activity has occurred which would result in the discharge of any toxic pollutant which is not otherwise limited in the permit.

## Table XI: Pollutants to Be Monitored for Individual Sub-Categories

**I. Petroleum Related Site Cleanup**

| **A. Gasoline Cleanup Sites** | | | | |
|---|---|---|---|---|
| **Pollutants To Be Monitored** | **Effluent Limit** | | **Limit type** | **Sample Type** |
| **Benzene** | **5.0 ug/l** | | **daily maximum** | **grab** |
| **Total Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)** | **100 ug/l** | | **daily maximum** | **grab** |
| **Naphthalene** | **20 ug/l**[8] | | **daily maximum** | **grab** |
| **Ethylene dibromide** | **0.05 ug/l** | | **daily maximum** | **grab** |
| **Methyl-t-Butyl Ether (MtBE)** | **In NH - 13.0 ug/l**<br>**In MA - 20.0 ug/l** | | **daily maximum** | **grab** |
| **tert-Butyl Alcohol** | **In NH - 1,000 ug/l**<br>**In MA - Monitor Only (ug/L)** | | **daily maximum** | **grab** |
| **tert-Amyl Methyl Ether** | **Monitor Only (ug/L)** | | **daily maximum** | **grab** |
| **Total Suspended Solids (TSS)** | **30.0 mg/l** | | **monthly average** | **grab** |
| **Total Petroleum Hydrocarbon (TPH)** | **5.0 mg/l** | | **daily maximum** | **grab** |
| **Lead** | **In MA:**<br>**FW[9] = 1.3 ug/L**<br>**SW[10] = 8.5 ug/L** | **In NH:**<br>**FW = 0.5 ug/L**<br>**SW = 8.5 ug/L** | **monthly average** | **grab** |
| **Iron** | **In MA: 1,000 ug/L** | **In NH: 1,000 ug/L** | **daily maximum** | **grab** |

[8] Naphthalene can be reported as both a purgeable (VOC) and extractable (SVOC) organic compound. The highest reported value should be used.

[9] FW = freshwater

[10] SW = saltwater

| B. Fuel Oils (and Other Oils) Sites | | | | |
|---|---|---|---|---|
| **Pollutants To Be Monitored** | **Effluent Limit** | | **Limit type** | **Sample Type** |
| **Acetone** | **Monitor Only (ug/L)** | | **daily maximum** | **grab** |
| **TPH** | **5.0 mg/l** | | **daily maximum** | **grab** |
| **Naphthalene** | **20 ug/l**[11] | | **daily maximum** | **grab** |
| **Polycyclic Aromatic Hydrocarbons (PAHs)** | **See Appendix III (#'s 35 & 36)** | | **daily maximum** | **grab** |
| **Benzene** | **5.0 ug/l** | | **daily maximum** | **grab** |
| **BTEX** | **100 ug/l** | | **daily maximum** | **grab** |
| **Nickel** | **In MA:<br>FW = 29.0 ug/L<br>SW = 8.2 ug/L** | **In NH:<br>FW = 16.1 ug/L<br>SW = 8.2 ug/L** | **monthly average** | **grab** |
| **Chromium (trivalent)** | **In MA:<br>FW = 48.8 ug/L<br>SW = 100 ug/L** | **IN NH:<br>FW = 27.7 ug/L<br>SW = 100 ug/L** | **monthly average** | **grab** |
| **Chromium (hexavalent)** | **In MA:<br>FW = 11.4 ug/L<br>SW = 50.3 ug/L** | **In NH:<br>FW = 11.4 ug/L<br>SW = 50.3 ug/L** | **monthly average** | **grab** |
| **Zinc** | **In MA:<br>FW = 66.6 ug/L<br>SW = 85.6 ug/L** | **In NH:<br>FW = 37 ug/L<br>SW = 85.6 ug/L** | **monthly average** | **grab** |
| **Iron** | **In MA: 1,000 ug/L** | **In NH: 1,000 ug/L** | **daily maximum** | **grab** |

| C. Petroleum Sites Containing Other Pollutants | | | |
|---|---|---|---|
| **Pollutants To Be Monitored** | **Effluent Limit** | **Limit type** | **Sample Type** |
| **All pollutants listed in Appendix III** | **See Appendix III** | **See Appendix III** | **grab** |

[11] Naphthalene can be reported as both a purgeable (VOC) and extractable (SVOC) organic compound. The highest reported value should be used.

**II. Non-Petroleum (i.e., Not Gasoline and Oil) Site Cleanups**

| **A. VOC Only Sites** | | | | |
|---|---|---|---|---|
| **Pollutants To Be Monitored** | **Effluent Limit** | | **Limit type** | **Sample Type** |
| **Carbon Tetrachloride** | **4.4 ug/l** | | **daily maximum** | **grab** |
| **1,2 (or o)-Dichlorobenzene** | **600 ug/l** | | **daily maximum** | **grab** |
| **1,3 (or m)-Dichlorobenzene** | **320 ug/l** | | **daily maximum** | **grab** |
| **1,4 (or p)-Dichlorobenzene** | **5.0 ug/l** | | **daily maximum** | **grab** |
| **1,1-Dichloroethane** | **70 ug/l** | | **daily maximum** | **grab** |
| **1,2-Dichloroethane** | **5.0 ug/l** | | **daily maximum** | **grab** |
| **1,1-Dichloroethylene** | **3.2 ug/** | | **daily maximum** | **grab** |
| **cis-1,2-Dichloroethylene** | **70 ug/l** | | **daily maximum** | **grab** |
| **Methylene Chloride** | **4.6 ug/l** | | **daily maximum** | **grab** |
| **Tetrachloroethylene** | **5.0 ug/l** | | **daily maximum** | **grab** |
| **1,1,1-Trichloroethane** | **200 ug/l** | | **daily maximum** | **grab** |
| **1,1,2 Trichloroethane** | **5.0 ug/l** | | **daily maximum** | **grab** |
| **Trichloroethylene** | **5.0 ug/l** | | **daily maximum** | **grab** |
| **Vinyl Chloride** | **2.0 ug/l** | | **daily maximum** | **grab** |
| **TPH** | **5.0 mg/l** | | **daily maximum** | **grab** |
| **Phenols** | **300 ug/l** | | **daily maximum** | **grab** |
| **Pentachlorophenol** | **1.0 ug/l** | | **daily maximum** | **grab** |
| **Total Phthalates**[12] | **3.0 ug/L** | | **monthly average** | **grab** |
| **Bis (2-Ethylhexyl) Phthalate (Di- (ethylhexyl) Phthalate)** | **6.0 ug/l** | | **daily maximum** | **grab** |
| **Total PCBs** | **0.000064 ug/L** | | **daily maximum** | **grab** |
| **Acetone** | **Monitor Only (ug/L)** | | **daily maximum** | **grab** |
| **1,4 Dioxane** | **Monitor Only (ug/L)** | | **daily maximum** | **grab** |
| **BTEX** | **100 ug/l** | | **daily maximum** | **grab** |
| **Iron** | **In MA: 1,000 ug/L** | **In NH: 1,000 ug/L** | **daily maximum** | **grab** |

[12] Sum of individual phthalate compounds.

| B. VOC Sites Containing Other Contaminants | | | |
|---|---|---|---|
| **Pollutants To Be Monitored** | **Effluent Limit** | **Limit type** | **Sample Type** |
| **All pollutants listed in Appendix III** | **See Appendix III** | **See Appendix III** | **grab** |

| C. Sites Containing Primarily Metals | | | |
|---|---|---|---|
| **Pollutants To Be Monitored** | **Effluent Limit** | **Limit type** | **Sample Type** |
| **All Metals listed in Appendix III** | **See Appendix III** | **See Appendix III** | **grab** |
| **Cyanide[13]** | **SW = 1.0 ug/l<br>FW = 5.2 ug/l** | **monthly average** | **grab** |
| **Carbon Tetrachloride** | **4.4 ug/l** | **daily maximum** | **grab** |
| **1,2 (or o)-Dichlorobenzene** | **600 ug/l** | **daily maximum** | **grab** |
| **1,3 (or m)-Dichlorobenzene** | **320 ug/l** | **daily maximum** | **grab** |
| **1,4 (or p)-Dichlorobenzene** | **5.0 ug/l** | **daily maximum** | **grab** |
| **1,1-Dichloroethane** | **70 ug/l** | **daily maximum** | **grab** |
| **1,2-Dichloroethane** | **5.0 ug/l** | **daily maximum** | **grab** |
| **1,1-Dichloroethylene** | **3.2 ug/** | **daily maximum** | **grab** |
| **cis-1,2-Dichloroethylene** | **70 ug/l** | **daily maximum** | **grab** |
| **Methylene Chloride** | **4.6 ug/l** | **daily maximum** | **grab** |
| **Tetrachloroethylene** | **5.0 ug/l** | **daily maximum** | **grab** |
| **1,1,1-Trichloroethane** | **200 ug/l** | **daily maximum** | **grab** |
| **1,1,2 Trichloroethane** | **5.0 ug/l** | **daily maximum** | **grab** |
| **Trichloroethylene** | **5.0 ug/l** | **daily maximum** | **grab** |
| **Vinyl Chloride** | **2.0 ug/l** | **daily maximum** | **grab** |
| **Total Suspended Solids (TSS)** | **30.0 mg/l** | **monthly average** | **grab** |

[13]Expressed as micrograms (ug) of free cyanide per liter.

**III. Contaminated Construction Dewatering**

| **A. General Urban Fill Sites** | | | |
|---|---|---|---|
| **Pollutants To Be Monitored** | **Effluent Limit** | **Limit type** | **Sample Type** |
| **All pollutants listed in Appendix III** | **See Appendix III** | **See Appendix III** | **grab** |

| **B. Listed Contamination Sites** | | | |
|---|---|---|---|
| **All pollutants listed in Appendix III** | **See Appendix III** | **See Appendix III** | **grab** |

**IV. Miscellaneous Discharges**

| **A. Aquifer Pump Testing** | | | |
|---|---|---|---|
| **Pollutants To Be Monitored** | **Effluent Limit** | **Limit type** | **Sample Type** |
| **All pollutants listed in Appendix III** | **See Appendix III** | **See Appendix III** | **grab** |

| **B. Well Development or Rehabilitation** | | | |
|---|---|---|---|
| **All pollutants listed in Appendix III** | **See Appendix III** | **See Appendix III** | **grab** |

| C. Hydrostatic Testing of Pipelines and Tanks | | | | |
|---|---|---|---|---|
| **Pollutants To Be Monitored** | **Effluent Limit** | | **Limit type** | **Sample Type** |
| **TSS** | **50 mg/l** | | **monthly average** | **grab** |
| **Total residual chlorine (TRC)** | **FW = 11 ug/l<br>SW = 7.5 ug/l** | | **monthly average** | **grab** |
| **TPH** | **5.0 mg/l** | | **daily maximum** | **grab** |
| **Benzene** | **5.0 ug/l** | | **daily maximum** | **grab** |
| **Total BTEX** | **100 ug/l** | | **daily maximum** | **grab** |
| **Naphthalene** | **20 ug/l[14]** | | **daily maximum** | **grab** |
| **Ethylene dibromide** | **0.05 ug/l** | | **daily maximum** | **grab** |
| **MtBE** | **In NH - 13.0 ug/l<br>In MA - 20.0 ug/l** | | **daily maximum** | **grab** |
| **tert-Butyl Alcohol** | **In NH - 1,000 ug/l<br>In MA - Monitor Only (ug/L)** | | **daily maximum** | **grab** |
| **tert-Amyl Methyl Ether** | **Monitor Only (ug/L)** | | **daily maximum** | **grab** |
| **PAHs** | **See Appendix III** | | **daily maximum** | **grab** |
| **Lead** | **In MA:<br>FW = 1.3 ug/L<br>SW = 8.5 ug/L** | **In NH:<br>FW = 0.5 ug/L<br>SW = 8.5 ug/L** | **monthly average** | **grab** |
| **Nickel** | **In MA:<br>FW = 29.0 ug/L<br>SW = 8.2 ug/L** | **In NH:<br>FW = 16.1 ug/L<br>SW = 8.2 ug/L** | **monthly average** | **grab** |
| **Chromium III (trivalent)** | **In MA:<br>FW = 48.8 ug/L<br>SW = 100 ug/L** | **IN NH:<br>FW = 27.7 ug/L<br>SW = 100 ug/L** | **monthly average** | **grab** |
| **Chromium VI (hexavalent)** | **In MA:<br>FW = 11.4 ug/L<br>SW = 50.3 ug/L** | **In NH:<br>FW = 11.4 ug/L<br>SW = 50.3 ug/L** | **monthly average** | **grab** |
| **Zinc** | **In MA:<br>FW = 66.6 ug/L<br>SW = 85.6 ug/L** | **In NH:<br>FW = 37 ug/L<br>SW = 85.6 ug/L** | **monthly average** | **grab** |
| **Iron** | **In MA: 1,000 ug/L** | **In NH: 1,000 ug/L** | **daily maximum** | **grab** |

[14] Naphthalene can be reported as both a purgeable (VOC) and extractable (SVOC) organic compound. The highest reported value should be used.

| Pollutants To Be Monitored | Effluent Limit | Limit type | Sample Type |
|---|---|---|---|
| **D. Contaminated Sumps** | | | |
| **All pollutants listed in Appendix III** | **See Appendix III** | **See Appendix III** | **grab** |

| **E. Utility Vaults & Manholes** | | | |
|---|---|---|---|
| **All pollutants listed in Appendix III** | **See Appendix III** | **See Appendix III** | **grab** |

| **F. Contaminated Dredge Condensates** | | | |
|---|---|---|---|
| **All pollutants listed in Appendix III** | **See Appendix III** | **See Appendix III** | **grab** |

**3. Flow Monitoring**

Although there is no single flow limit that applies to all dischargers covered by this general permit, to ensure ongoing compliance with the effluent limits and proper operation and maintenance of treatment systems, the operator should monitor and comply with two site specific flow limits: the design flow limit and the total elapsed flow limit on any treatment components.

As discussed earlier in this Fact Sheet, the individual components of a wastewater treatment systems are designed and constructed within a margin of safety to allow for adequate treatment of the wastewater within certain limitations or "design flow." For the purposes of this RGP, the system's "design flow" limit is the flow capacity of the component or segment of the treatment train with the lowest capacity. In other words, the individual piece of equipment with the lowest design flow in the treatment system would set the design flow limit for the site. Similarly, in order to ensure proper operation and maintenance of the effluent treatment system, the operator needs to monitor total elapsed flow of the effluent. Total flow measurement is needed because many components of treatment systems have a predicted performance life measured in terms of total gallons of wastewater throughput.

**4. Sampling and Testing -** All samples shall be tested using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136. As provided for in EPA's Model Permit for Discharges Resulting from the Cleanup of Gasoline From Underground Storage Tanks (June 1989), for measuring volatile compounds, however, Method 8260, or an equivalent, may be used as a substitute for CWA Methods 602, 624, or 1624. Permittees should note that any method changes must be accompanied by documented quality assurance/quality control (QA/QC) test results to prove that the analytical process can achieve the lower detection limits of Method 8260.

The monitoring requirements have been established to yield data representative of the discharge under authority of Section 308(a) of the Act and 40 CFR Sections 122.41(j), 122.44(i) and 122.48, and as certified by the State. Monitoring must be conducted according to the procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the RGP. Samples taken in compliance with the monitoring requirements specified in the RGP shall be taken at a location that provides a representative analysis of the influent, as well as the effluent just prior to discharge to the receiving water or, if the effluent is commingled with another permitted discharge, prior to such commingling. The results of this monitoring shall be summarized and kept on site and available for inspection.

However, certain monitoring requirements, such as frequency of sampling may be reduced upon demonstration by ongoing sampling and analytical data that the influent or effluent either does not contain a limited parameter or does not demonstrate any toxicity

in the case of whole effluent toxicity testing. This change requires prior approval by the Director.

**5. Minimum Levels** - The test method in 40 CFR 136 for each pollutant has a minimum level (ML) at which it can accurately quantify the chemical. Appendix VI of the RGP lists tests methods and the MLs for each pollutant limited in the permit. Where sample concentrations are above the ML, any of the methods listed for that pollutant in Appendix VI may be used. However, where approved methods have MLs above the permit limits, the permittee must use the approved method with the lowest possible ML before the concentration can be considered non-detectable.

**6. Acute Toxicity Testing and Monitoring** - The States of Massachusetts and New Hampshire have narrative criteria in their water quality regulations (see Massachusetts 314 CMR 4.05(5)(e) and New Hampshire Part Env-Ws 1703.21) that prohibit toxic discharges in toxic amounts. The RGP does not allow for the addition of materials or chemicals which would produce a toxic effect to any aquatic life. If the States and/or EPA suspect that a discharge has a reasonable potential to cause or contribute to an excursion above the State's narrative criterion for toxicity, they may request that a Whole Effluent Toxicity (WET) test result and/or priority pollutant scan of the water to be discharged be required as part of the Notice of Intent, as authorized at 40 CFR Section 122.44(d)(1)(v).

If toxicity testing is required, EPA will provide the permittee with a copy of the test procedure and detailed protocol. The WET test will consist of one chronic and modified acute toxicity screening test with one hundred percent effluent sample. Ceriodaphnia dubia for fresh water and Mysid shrimp for marine water shall be used as test organisms.

The 126 EPA Priority Pollutants are found at 40 CFR Section 423, Appendix A. All samples shall be tested using the analytical methods found in 40 CFR Section 136 or alternative methods approved by EPA in accordance with the procedures in 40 CFR Section 136. The permittee shall submit to EPA-NE and the appropriate State Agency the results of all testing conducted, as required at 40 CFR Section 122.41(l)(4)(ii).

**7. Recordkeeping and Reporting Requirements**

In addition to the recordkeeping requirements found in Part II.C of the permit, the results of the sampling, monitoring, testing, and analysis must be summarized monthly on the monthly summary form provided for in Appendix VIII of the permit and kept on-site or with the permittee and available for inspection by EPA or the State. However, if the results indicate that a violation of the effluent limitations of this permit has occurred, or upon request by EPA or the State, the permittee must submit a summary of the results to EPA-NE and the State to the following addresses:

1) **EPA**:

U.S. Environmental Protection Agency, Region I
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114-8127

2) **Massachusetts Department of Environmental Protection**:

i. The Regional Offices wherein the discharge occurs:

Massachusetts Department of Environmental Protection
Bureau of Waste Management
Western Regional Office
436 Dwight Street, Suite 402
Springfield, MA 01103

Massachusetts Department of Environmental Protection
Bureau of Waste Management
Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02347

Massachusetts Department of Environmental Protection
Bureau of Waste Management
Northeast Regional Office
One Winter Street
Boston, MA 02108

Massachusetts Department of Environmental Protection
Bureau of Waste Management
Central Regional Office
627 Main Street
Worcester, Massachusetts 01608

ii. Copies of all notifications required by this permit must also be submitted to the State at:

Massachusetts Department of Environmental Protection
Division of Watershed Management
627 Main Street, 2nd floor
Worcester, MA 01608

3) **New Hampshire Department of Environmental Services**: Signed copies of all information and certifications required herein must be submitted to the State at:

New Hampshire Department of Environmental Services
Water Division
Wastewater Engineering Bureau
P.O. Box 95,
Concord, New Hampshire 03302-0095.

**B. Special Monitoring & Reporting Requirements Common to All Dischargers**

The following monitoring conditions are designed to provide a number of system checkpoints during startup and re-start after shutdown periods, including:

**1. Influent Monitoring Required**- The RGP requires influent sampling. For over 10 years, EPA-NE has routinely required monitoring of both influent to treatment and effluent to the receiving water or drainage system at projects pursuant to approved site remediation activities in MA and NH. After the issuance of over 2,000 discharge authorizations in MA and NH, EPA-NE does not believe that influent sampling places an unnecessary burden on these types of projects Although compliance with the effluent limitations in the permit is determined by the effluent sampling, sampling the influent to the treatment system provides critical information necessary for proper operation and maintenance of the treatment system, removal efficiencies, and other quality control factors. This type of data also provides the EPA and States with information about the amount of pollution being removed from the environment as the result of the permit. .

Under the RGP, permittees may apply for a reduction in the frequency of monitoring, including influent monitoring, by submitting a notice of change (NOC) (see Appendix V of the RGP). For example, after the first six months of testing, if influent monitoring results do not change significantly, the permittee may apply for a decrease in sampling by submitting an NOC. However, until EPA provides written confirmation allowing the change, the permittee must continue monitoring at the frequency required by the RGP.

**2. Initial Treatment System Discharge Startup**- To ensure proper operation of the treatment equipment and achievement of effluent limits during the initiation of discharge, the RGP requires additional sampling and analysis during the first month of discharge. Laboratory samples (typically grab samples accompanied by appropriate chain-of-custody forms) must be obtained from the influent to treatment and from the effluent to the drainage system once each day for the first, third, and sixth day of discharge. (Note: in cases where days fall on a holiday, Sunday, or other normal non-workday, the schedule may be adjusted to the next day before or after the off-day and noted on the monitoring report).

Samples must be analyzed with a 72-hour turnaround time in order to minimize breakthrough of the pollutants through the control system. If the system is working properly and achieving effluent limits, sampling for the remainder of the first month shall be weekly and then monthly thereafter. Turnaround time for these additional samples

shall insure that no more than seven (7) days pass between the sampling event and results received and reviewed by the operator.

During system startup, the operator may also utilize field monitoring and visual observations as appropriate (e.g. portable organic vapor analysis, pH, turbidity, or other tests) to aid in proper system startup. Any indication of system malfunction or violation of effluent limitations greater than ten (10) percent requires immediate shutdown of the system discharge until appropriate repairs or other actions can be implemented.

If the system is shut down during startup, due to system malfunction or violations of effluent limits, at re-start of treatment and discharge, field monitoring shall again be utilized and an additional laboratory sample must be taken with a 24-hour turnaround time when results must be reviewed by the operator. If the problem has been corrected, the regular sample schedule may resume. If the problem persists, the system must be shut down again and repairs made. EPA-NE and the state contact must also be notified by telephone, fax, e-mail or other means within 48-hours of the need to shut down the treatment system and cease discharge a second time. Discharge may resume upon completion of correction of the problems or unless otherwise directed by EPA-NE or the state contact.

**3. Intermittent Operations and System Re-Start**- Intermittent operation of treatment systems is occasionally necessary due to seasonal fluctuations of water table elevations in groundwater extraction systems, climate conditions, ongoing aquifer tests, system repairs, or other circumstances. Prolonged system shutdown can adversely affect certain treatment units (for example, commonly used carbon adsorption systems if fresh carbon is not installed). The RGP establishes a requirement for additional monitoring during re-start if the discharge has been interrupted for greater than 30 consecutive days but fewer than 90 days. A minimum of two (2) sets of influent and effluent laboratory samples must be taken during the first week after re-start of discharge with a 72-hour turnaround time for review by the operator. If the system is operating properly and meeting the effluent limits, monitoring may resume on the monthly schedule as before shutdown. If any sample or other observation indicates that effluent quality exceeds limitations by more than ten (10) percent, the same shutdown, repair, and notification requirements as required during initial startup apply.

**4. Extended System Shutdown** - Treatment systems and discharges which are interrupted for **greater than 90 consecutive days** are considered extended shutdowns. Any system re-start after this period shall revert to the monitoring requirements for initial system startup.

**5. Short Term Discharges** - Discharges lasting **less than one week** (7 days), such as; pump tests, discharge of temporarily containerized waters, etc, ***excluding hydrostatic testing discharges***, which are then terminated and are not planned to be re-started, are considered "short-term discharges." For all short term discharges, a minimum of three

(3) representative influent and effluent laboratory samples are required. At least one sample must be taken on the first day of discharge and one on the last day of discharge.

EPA-NE recognizes that due to the time requirements for samples to be sent to a laboratory, analyzed, and the results obtained, the discharge may have ceased or be nearly complete by the time the laboratory results are available to the operator. However, the permittee is required to apply appropriate BMPs and utilize available field screening techniques in concert with accepted treatment technology to assure compliance with the permit limitations.

## IX. Best Management Practices and Requirements for BMP Plan

### A. General

The RGP contains requirements for operators to insure Best Management Practices (BMPs) for the facility or site operations generating the water(s) being discharged under this RGP. EPA is authorized under 40 CFR Section 122.44(k)(4) to impose BMPs in NPDES permits when the Agency finds that BMPs are "reasonably necessary to ... or to carry out the purposes of the CWA." One of the key functions of a BMP is to prevent spills and other releases without treatment, bypass of treatment, or other permit violations from occurring.

EPA-NE has routinely included BMP requirements in individual and general permits issued by the Region and at site remediations. The variety of activities covered by this RGP make it impractical to prescribe standard BMPs or a plan for every discharger. Many covered discharges only occur for short time periods or may not have personnel on site at all times overseeing the operation. BMPs and/or a written BMP plan can be tailored to the requirements of the facility or site. EPA-NE is, however including a number of specific BMPs in the RGP which are consistent with standard operating practices. Significant additional information on BMPs and pollution prevention (P2) plans can be found in several EPA nationwide general permits including the Storm Water Multi-Sector General Permit (FR/Vol. 65, No. 210/Monday, October 30, 2000).

### B. Implementing BMPs and Development of BMP Plan

Under the RGP, all permittees must implement BMPs, including any applicable BMPs in the permit and or other BMPs needed to minimize the discharge of pollutants to the environment during the life of the discharge or until submission of a notice of termination of discharge.

All operators overseeing discharges (including existing discharges) which are or plan to continue for **greater than 180 days** from approval of coverage under the RGP, are required to develop and implement a written BMP Plan (BMPP) within **30 days** after receiving notification from EPA of coverage under the RGP. The BMPP must be

maintained on-site or at the location of the principal operator identified in the RGP and made available for inspection. Operators overseeing discharges of **less than 180 days**, must be able to demonstrate that BMPs are in place and being implemented prior to discharge.

The BMPP may be a stand alone document or may be incorporated into any other BMPP, Pollution Prevention (P2), or Spill Control and Counter Measures (SPCC) plan required under other permits or programs. The BMPP must address all of the specific RGP BMP requirements and include any other BMPs which may be necessary to minimize the discharge of pollutants. The BMPP must be maintained on-site or at the location of the principal operator identified in the RGP and made available for inspection.

Annually, no later than February 15th, the permittee submit a certification to the State and EPA-NE which certifies that the previous calendar year's inspections and maintenance activities were conducted, results recorded, and records maintained and the facility is in compliance with the BMP Plan. Annual certifications should be submitted to the addresses listed in Section VIII.A.7 above.

In addition to prevention and reporting of releases, specific BMPs include but are not limited to:

**1. Site Security** - Typically, treatment systems are brought to a site or facility as mobile units and remain on site for the duration of the discharge or treatment facilities are constructed on site in either temporary or permanent arrangements. Some permanent or semi-permanent treatment systems are often automated and do not require qualified personnel to be present on a regular basis (for example, a gasoline station with a small system extracting contaminated groundwater over several years). Other temporary systems only have personnel on-site during regular work hours (for example, construction sites). For this reason, EPA-NE is recommending a special condition regarding site security specific to the systems integral to maintaining the quality of the discharge authorized by the RGP.

Operators who have separate security provisions should either insure that the security for the treatment and other systems related to the NPDES discharge is either incorporated into the overall site security plan or has separate site security provisions as part of a BMP plan. Site security provisions will insure that system failure, vandalism, or other incidents shall be addressed in a timely manner, preventing the discharge of oil or hazardous materials exceeding the requirements of this permit. BMPs may include; security fencing, lighting, local or remote equipment failure alarms transmitted to a manned location, automatic shutdown systems, routine inspection and maintenance schedules, and other measures.

**2. Management of Generated Wastes** - Activities associated with the proper operation and maintenance of treatment or other systems associated with the discharge(s)

authorized by the RGP will generate solid and/or hazardous wastes which are regulated under federal, state, and local laws, regulations, or other requirements. The RGP contains a special condition requiring operators of facilities covered by this permit to adhere to proper waste management practices as part a BMP for the facility. Typically, solid wastes generated from facilities covered by this permit can include:
i) spent activated carbon from both water and air pollution units containing removed contaminants;
ii) solids and sludges from sedimentation tanks and filtration units (including waste filters);
iii) collected "free product" or other concentrated non-aqueous phase contaminants such as oil or gasoline from an oil/water separator;
iv) collected waste from cleaning pipes and tanks before hydrostatic testing;
v) waste treatment chemical additives and spent chemicals used for sampling and analytical purposes; and
vi) other miscellaneous wastes.

Solid and hazardous wastes are regulated under the Resource Conservation and Recovery Act (RCRA) 40 CFR Part 261. Under RCRA, EPA-NE has authorized the Commonwealth of Massachusetts and the State of New Hampshire to manage the solid and hazardous waste programs. In Massachusetts, solid wastes generated at sites listed under the MA Contingency Plan (MCP) (314 CMR 40.0000) are termed "Remediation Waste" and are required to be managed under 314 CMR 40.0030. These wastes, and wastes generated as a result of actions to comply with this RGP at any other Massachusetts facility or site not covered by the MCP, are also regulated under 310 CMR 30.000, "the Massachusetts Hazardous Waste Regulations."

In the State of New Hampshire, Part Env-Wm 412, Reporting and Remediation of Oil Discharges, and Env-Wm 100-1100, Hazardous Waste Rules are the primary regulations for waste management at facilities or sites covered by the RGP. All operators of systems generating solid and hazardous wastes under the RGP are expected to familiarize themselves with the appropriate federal, state, and local rules for proper handling and disposal of such wastes and to insure compliance with them. Submission of a Notice of Termination (NOT) of the NPDES discharge described in Section VI.A.5. of this Fact Sheet and Part I.J. of the RGP does not relieve the operator of any requirement for proper management of solid and hazardous waste generated as a result of complying with the RGP.

**3. Prohibition of Discharge Exceeding Design Flow** - Wastewater treatment facilities/systems and individual components within the facility/system are designed and constructed with a margin of safety to allow for adequate treatment of the wastewater within certain hydraulic limitations or "design flow" of the facility/system. The design of a facility/system utilized for many discharges covered by this RGP might not be site specific. For example, a mobile treatment system brought to a site or components assembled for the period of discharge may each have differing design flow capacities.

For the purposes of this RGP, the “system design flow” is the unit operation or segment of the treatment train with the lowest capacity for adequate treatment.

In other words, when the control efficiency of the treatment system is calculated, the individual piece of equipment with the lowest design flow in the treatment system would set the design flow limit for the site. For example, if the control system consists of a settling tank with the anticipated control efficiency at a flow of 10,000 gallons per day attached to a carbon adsorber with a anticipated control efficiency at a design flow of 5,000 gallons per day, the design flow of the system would be 5,000 gallons per day. Therefore, for the control system to work as needed to comply with the effluent limits in the general permit, the design flow of the system must be monitored with a continuous flow meter. The NOI instructions in Appendix V of the RGP requires inclusion of the treatment system design flow in the NOI for coverage under the RGP. The RGP prohibits discharge at a flow in excess of the system design flow of the facility/system.

**4. Preventative Maintenance Required** - The RGP, Part II, Section B., Operation and Maintenance of Pollution Controls, establishes the requirements for properly operating and maintaining water treatment equipment installed for compliance with this permit. Water treatment equipment installed for the purposes of complying with the RGP might or might not be manned full time or have trained personnel on-site at all times. Proper preventative maintenance is critical to insure compliance with the permit and prevention of bypass or upset of the water treatment equipment.

Specifically, the operator is required to develop and include with the BMP plan, a preventative maintenance plan (PMP) to insure a schedule is in place of regular activities to operate and maintain any water treatment equipment used at the site. For example, many remediation systems covered under this permit utilize activated carbon treatment typically enclosed in drums or tanks arrayed in series such that the first unit receives the bulk of the pollutant load until “breakthrough” occurs (usually a predetermined increase in pollutant in the effluent from the unit) with the second or third units serving as polishing units. At breakthrough, the first unit must be replaced or the flow reversed such that the last unit becomes the first unit, etc. until new or regenerated carbon is installed. Preventative measures include change out of carbon on a regular schedule based on operating experience to provide an added margin of safety between routine inspections and scheduled maintenance visits.

**5. Employee Training** - Any BMP plan developed for the facility covered by the RGP must include a program for informing personnel at all levels of responsibility of the requirements contained in the RGP and the BMP plan, including, but not limited to those requirements specifically addressed by the various Parts of the RGP. Where appropriate, contractor personnel should also be trained in relevant aspects of the BMP plan and the requirements of the RGP. A program for training new employees and for refresher training for other employees who have direct or indirect responsibility for insuring compliance with the RGP should be included in the BMP plan.

The training program may be tailored to the specific permit situation. For example, a consulting firm conducting a short-term pump test under the RGP must be able to demonstrate that employees involved in the pump test, and subsequent treatment and discharge of water under the RGP, have adequate knowledge of the permit requirements and treatment system operations. For long term dischargers where constructed treatment facilities are maintained, and potential changes in operators and/or employee turnover, may occur, the owner and operator(s) should insure that transitional training is provided. In certain cases, the States require operators of water treatment equipment to be certified at a particular level to operate the system.

**6. Management of Run-on and Runoff -** Any BMP plan developed for the facility covered by the RGP must include actions to control extraneous run-on and runoff of uncontaminated waters which may co-mingle with contaminated waters requiring treatment and discharge. EPA-NE recognizes that in many circumstances, especially at contaminated construction sites, incidental storm water or groundwater may mix with contaminated flows, however the degree to which this occurs must be minimized to the greatest extent practicable. Use of structural controls such as berms, sheet piling, diversion channels, temporary covers over work areas, and other means should be considered. Minimization of the volumes of water needing treatment will reduce the size of treatment facilities needed, reduce the costs involved, and minimize the overall environmental impacts of the discharge. In cases where the site or facility is large and may be covered by other permit requirements (such as the EPA Phase I or II construction permit for storm water) the run-on/runoff controls may be integrated with the overall site requirements.

**7. Erosion, Scouring and Sediment Control -** State adopted surface water quality standards contain requirements for solids, turbidity, and other factors for certain classes of waters. An important element of any BMP plan is to insure that the discharge(s) covered by the RGP do not adversely affect existing water quality by preventing any erosion, stream scouring, or sedimentation caused directly or indirectly by the discharge. High volume pumping tests, large volume hydrostatic testing, contaminated construction dewatering and other activities covered by the RGP have the potential to cause water quality degradation. Structural and other controls such as energy dissipation techniques, controlled discharges, etc. can be implemented to minimize these impacts.

## X. Special Permit Conditions Common to All Categories of Discharges

### A. Compliance with Municipal Separate Storm Sewer (MS4) Requirements and Storm Water Management Programs (SWMPs)

Many communities are currently finalizing or implementing Storm Water Management Programs (SWMPs) under EPA's Phase I and II Municipal Separate Storm Sewer (MS4) permit. As part of that program, subject communities may be the permitting authority for discharge activities to their MS4 system, including some of the activities covered by the

RGP. Dischargers covered by the RGP who discharge indirectly into surface waters through MS4 collection systems must comply with local requirements for discharge to that system. Similarly, operators who are utilizing a non-municipal storm sewer system at a facility covered by the EPA Multi-Sector Storm Water General Permit for Industrial Activities must comply with any applicable SWPPP.

In many cases, the owner of the facility covered by the multi-sector permit and by this RGP may be the same. However, in the case of separate ownership and/or different operators, the owner/operator of the facility covered by the RGP must notify the owner/operator of the facility covered by the multi-sector permit. Also, any local permit, monitoring, or other information regarding the operator's compliance with the local requirements shall be maintained with the compliance records for this permit.

The sites authorized to discharge under the final general permit will receive written notification from EPA-NE with State concurrence. It is important to note that an authorization to discharge under this general permit, where the activity discharges to a municipal or private storm drain owned by another party, does not convey any rights or authorization to connect to that drain.

**B. Category specific requirements for hydrostatic testing dischargers**

**1. Background -** Hydrostatic testing is performed by sealing the segments to be tested at both ends, filling the segment with water, pressurizing the segment, and then checking the integrity of the segments for some duration of time. Following the test, the pressure is released and the pipeline is dewatered. The test water discharges are, therefore, batch discharges. Since the test water discharges are batch discharges of short term duration, the limits in the permit are in terms of daily maximum concentrations, as allowed by 40 CFR Sections 122.45 (e) and (f).

The fill water used in hydrostatic testing of pipelines may come from a wide range of sources. These sources include rivers, streams, lakes, ponds, wells, municipal water supplies and, for offshore portions of pipelines, marine waters. Often the hydrostatic test water is discharged back into the same water body from which it was taken. In these cases, the pollutants of concern are those added to the fill water during the hydrostatic test. Where the fill water is discharged into a different water body from which it was taken, the pollutants of concern are not only those added during the pipeline test, but also those contained in the fill water prior to the test.

New pipelines should be relatively free of pollutants that could be discharged along with the hydrostatic test water. Pollutants in the pipeline prior to the hydrostatic test may include construction debris, suspended solids from soil and welding solids, and lubricating oil. Existing natural gas pipelines have the potential for containing contamination in the discharged hydrostatic test water, including hydrocarbon condensates and residues left by the natural gas. Hydrocarbons typically found in gas

pipeline condensates which may contaminate the test water include benzene, toluene and xylenes. Large molecular weight petrochemicals in the gas pipeline tend to deposit on the internal pipeline walls due to retrograde gas condensation.

**2. Best Management Practices for Pipelines and Tanks** - Conventional pollutants that might be discharged in the hydrostatic test water from new and existing natural gas pipelines are typically TSS, hydrocarbons, and pH. The current, widely practiced pollution control technology for discharges of hydrostatic test water from new pipelines consists of pre-cleaning, such as mechanical scouring, or "pigging," and/or rinsing with water or a detergent solution, of the pipeline segment(s) before hydrostatic testing. Additional treatment of hydrostatic test waters may or may not be needed depending on the situation and potential pollutants involved, e.g., depending if tank testing or pipeline testing. The necessity of additional treatment may also change depending on whether the testing is for existing pipe or new pipe construction.

The 1996 Gas Research Institute study (see discussion of the Benzene limit for hydrostatic testing in section VI above) gathered data on benzene, BTEX, oil and grease and total suspended solids (TSS) in hydrostatic test water both before and after treatment. The results of the information in the GRI study indicate pre-pigging to be the most effective way of lowering benzene, BTEX and oil and grease levels, as well as TSS levels, in the test water discharges. Although a pre-cleaning/rinse solution was not used in the actual tests, the study agreed that using a pre-cleaning/rinse solution would also enhance the lowering of these pollutants.

Wastewater from hydrostatic testing may contain a wide variety of toxic pollutants that were removed from the pipeline during the pre-cleaning or treatment operations. It should be noted that the RGP prohibits the discharge of any sludge generated in the pre-cleaning nor any rinsing solutions used in the pre-cleaning of the pipelines. The RGP also prohibits the discharge of hydrostatic test water to which treatment chemicals, corrosion inhibitors or biocides have been added. Therefore, EPA expects that those wastewaters will be collected and shipped offsite for proper disposal.

In addition to meeting the numerical limits and other general BMPs, hydrostatic testing dischargers must insure that certain BMPs are followed and certain minimum testing requirements are met. The RGP contains a number of BMPs as well as appropriate sampling and analysis requirements. For example, the RGP requires the following BMP's: 1) basic cleaning/removal of scale, soil, residues, etc.; 2) control of site source water vs. receiving water (ie. concern with discharge of possible high volumes of low quality water to a higher quality water source); 3) identification and control of chemical additives; and 4) the use of de-watering structure to dissipate energy and control erosion.

**3. Hydrostatic Testing Discharge Sampling and Monitoring Requirements** - EPA-NE is establishing separate sampling requirements for hydrostatic test waters due to the unique nature of these activities. Historically, EPA-NE has issued individual permits,

including oil terminal permits, which contain requirements for monitoring of hydrostatic test discharges. Additionally, EPA-NE has established monitoring policies for other hydrostatic tests including gas and oil pipeline construction and repair. These types of monitoring requirements are being carried forward in the RGP. *NOTE: Facilities for which hydrostatic testing is covered under an individual permit are not covered under the RGP unless requested and approved.*

Additional sampling and monitoring requirements for these activities include:
a.*For New and Existing Tanks*: The operator must take a minimum of six (6) representative grab samples.

1) For influent sampling, the operator must take one (1) sample of the fill (source) water during the first 10% of the fill segment time and one (1) sample during the last 10% of the fill-segment time.
2) For in-process sampling, the operator shall take samples of the tank water following depressurization: one (1) at top and one (1) at bottom. The operator shall analyze and evaluate in-process samples prior to discharge and if the analysis demonstrates that the water quality is not consistent with the effluent limits established in this permit, the operator shall not discharge the effluent prior to treatment.
3) For effluent sampling, the operator must take one (1) sample of the discharge water during the first 10% of discharge and one (1) sample during the last 10% of discharge. If at anytime the analysis demonstrates that the discharge water quality is not consistent with the effluent limits established in this permit, the operator shall cease discharging the effluent until further treatment achieves the effluent limits.
4) All effluent sampling shall be taken prior to the combination with wastewaters of any type.

b. *For New and Existing Pipelines*: The operator must take a minimum of six (6) representative grab samples:

1) For influent sampling, the operator must take one (1) sample of the fill (source) water during the first 10% and one (1) sample during the last 10% of the fill-segment time;
2) For in-process sampling, the operator shall take two (2) samples of the pipeline water following depressurization. The operator shall analyze and evaluate in-process samples prior to discharge and if the analysis demonstrates that the water quality is not consistent with the effluent limits established in this permit, the operator shall not discharge the effluent prior to treatment;
3) For effluent sampling, the operator must take one (1) sample of the discharge water during the first 10% of discharge and one (1) sample during the last 10% of discharge; and
4) All effluent sampling shall be taken prior to the combination with wastewaters of any type.

## XI. Administrative Requirements

### A. Notification of Change of Conditions

The RGP contains provisions for a change in certain conditions which do not require submission of a new NOI, but do require submission of a notice of change (NOC) to the Director with a copy to the state agency (see Appendix V of the RGP). This is *not* a permit modification as allowed under 40 CFR Section 122.62. A general permit, due to its broad coverage, cannot be modified to accommodate changes for an individual permittee. However EPA has identified several parts or conditions within the RGP which allow for limited changes to be made by the operator upon submission of a NOC. These provisions are noted within the permit and consist of:

**1. Reduction in certain monitoring requirements**- Certain monitoring requirements may be reduced upon demonstration by ongoing sampling and analytical data that the effluent either no longer contains a limited parameter or does not demonstrate any toxicity in the case of whole effluent toxicity testing, where required. To be eligible for a reduction in **influent** monitoring, the permittee must provide **6 months** of data. To be eligible for a reduction in **effluent** monitoring of a pollutant that is present in the discharge, the permittee must provide **12 months** of data demonstrating compliance. This type of change requires prior approval by the Director. Prior to receiving written approval, the permittee must continue to monitor at the frequency specified in the RGP.

**2. Change in flow conditions** - A NOC can be used to notify of a change in flow conditions which may increase the daily average or maximum flow rate by more than twenty-five (25) percent, provided the permitted flow design capacity of the treatment system is not exceeded.

**3. Change in treatment -** An NOC can be used as notification of a change in treatment which: 1) affects the design flow of the system by either increasing or decreasing the design flow, and/or, 2) adds or removes any major operable unit of the system.

**4. Chemical additives** - The permittee may propose the use of chemical treatment additives (e.g., foam control, emulsifiers, chelating agents, flocculating agents, pH adjusting chemicals, etc.) to enhance the treatment system performance and demonstrate that the addition of such agents will not add any pollutants which may cause a violation of receiving water standards or cause the overall effluent to violate effluent limitations. The permittee must attach, with the NOC, the material safety data sheets (MSDS) for the chemical(s) proposed to be added and receive written approval from the Director before use.

**5. Change of discharge location** - Providing that the receiving water information submitted with the original NOI (or for applicants covered by a prior application for individual permit) remains the same (for example, outfall moved from storm drain to

drainage ditch, etc.), location of the discharge may be modified. For changes in receiving water, a new NOI is required.

**6. Temporary cessation of discharge** - For any temporary interruption or cessation of discharge planned to extend greater than 90 days, the permittee must submit a NOC including; i) the reasons for the interruption or cessation of discharge, ii) the estimated time frame when the discharge will cease and be re-started, and iii) an acknowledgment that "start-up" monitoring will be resumed when the discharge is re-started as required the RGP. The Director may notify the permittee in writing by certified mail, that the authorization to discharge under the RGP will be revoked on a certain date and provide the reasons for revocation. If authorization to discharge is revoked, a new NOI form or an application for individual permit must be submitted and discharge authorized prior to recommencing discharge.

**7. Change in pH range in MA** - In Massachusetts, the permittee may make a demonstration that the pH range may be widened due to naturally occurring conditions in the receiving water or the naturally occurring source water is unaltered by the permittee's operation. However, in no case can the permittee discharge with a pH outside of the range 6.0 - 9.0 s.u. The scope of any demonstration must receive prior approval from the MA DEP. An NOC must be submitted to the Director upon approval from the State.

**8. Change to administrative information** - Certain administrative information may be changed via an NOC, including:1) changes in addresses or contact information and 2) transfer of ownership according to 40 CFR Section 122.61(b) which requires: i) notice to the Director at least 30 days prior to the transfer date; ii) inclusion of a written agreement between the new and existing permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and iii) the Director does not notify the existing and proposed new permittee of his or her intent to revoke coverage under the RGP.

**9. NOC Forms** - A copy of the suggested NOC form is included in Appendix V of the RGP. Either the suggested form or an official correspondence may be used providing it contains the information required by the NOC instructions. See Appendix V of the RGP.

**10. Submittal of Forms** - Completed NOC forms must be submitted to EPA-NE at the following address as well as a copy to the State agency (see addresses in Appendix V):

US Environmental Protection Agency
RGP-NOC Processing
Municipal Assistance Unit (CMU)
1 Congress Street, Suite 1100,
Boston, MA 02114-2023.

**B. Notice of Termination**

**1. Requirement to Notify -** Operators of facilities and/or operations authorized under this permit shall notify the Director of the termination of discharge(s) authorized under the RGP. A copy of the suggested Notice of Termination (NOT) form and instruction for completing the suggested NOT are contained in Appendix V of the RGP. Either the suggested NOT or other official correspondence must be completed and submitted within **30 days** following cessation of discharge(s) authorized by the RGP, unless cessation is temporary as described in the NOC section above.

**2. NOT Forms -** Either the suggested NOT form in Appendix V of the RGP or alternative correspondence must include the following information:

1) Name, mailing address, and location of the site for which the notification is submitted;
2) Name, address and telephone number of the operator addressed by the NOT;
3) The NPDES permit number assigned;
4) An indication that the discharge has been permanently terminated.
5) Signature according to 40 CFR Section 122.22, including the following certification by the permittee:

*I certify under penalty of law that all discharges from the identified facility that are authorized by the "Remediation General Permit" in Massachusetts and New Hampshire, the RGP, have been terminated. I understand that by submitting this Notice of Termination (NOT) I am no longer authorized to discharge waters covered by the RGP and that discharging pollutants from the activity covered by the RGP is unlawful under the Clean Water Act where the discharge is not authorized by a permit. I also understand that the submission of this NOT does not release an owner/operator from liability for any violation of the RGP or the Clean Water Act.*

**3. Submittal of Forms -** Completed NOT form or alternative correspondence must be submitted to EPA-NE at the following address as well as a copy to the state agency (see addresses in Appendix V):

US Environmental Protection Agency
RGP - NOT Processing
Municipal Assistance Unit (CMU)
1 Congress Street, Suite 1100
Boston, MA 02114-2023

## XII. Standard Permit Conditions 40 CFR Sections 122.41 and 122.42

Permittees must meet the standard permit requirements of 40 CFR Sections 122.41 and 122.42, as applicable to their discharge activities. Specific language concerning these requirements is provided in Part II of the permit.

## XIII. Summary of Response to Comments [Reserved]

## XIV. Other Legal Requirements

### A. Coastal Zone Management Act

The Coastal Zone Management Act (CZMA), 16 U.S.C. Sections 1451 et seq., and its implementing regulations [15 CFR Part 930] require that any federally licensed activity affecting a State's coastal zone be consistent with the enforceable policies of approved state management programs. In the case of general permits, EPA has the responsibility for making the consistency certification and submitting it to the State for concurrence. EPA-NE is in the process of seeking the state consistency certifications for this general permit from the Executive Office of Environmental Affairs, Massachusetts CZM, 251 Causeway Street, Suite 800, Boston, MA 02114; and New Hampshire Coastal Program, located at the New Hampshire Department of Environmental Services, P.O. Box 95, Concord, NH 03302-0095.

### B. Environmental Impact Statement Requirements

This general permit does not authorize discharges from any "new source" as defined under 40 CFR Section 122.2. Therefore, the National Environmental Policy Act, 33 U.S.C. Sections 4321 et seq., does not apply to the issuance of these general permits. Potential permittees and others reviewing this document should take careful note of the distinction between "new discharge" and "new source" (see definitions) since most discharges covered by this permit will be considered new discharges.

### C. Executive Order 12866

EPA has determined that this general permit is not a "significant regulatory action" under the terms of Executive Order 12866 and is therefore not subject to OMB review.

### D. Paperwork Reduction Act

The information collection requirements of this permit were previously approved by the Office of Management and Budget under the provisions of the Paperwork Reduction Act, 44 USC 3501 *et seq.* and assigned OMB control number 2040-0086 (NPDES permit application) and 2040-0004 (Discharge Monitoring Reports).

### E. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA), 5 USC 601 et seq., requires that EPA prepare a regulatory flexibility analysis for rules subject to the requirements of 5 USC 553(b) that have a significant impact on a substantial number of small entities. The permit issued today, however, is not a "rule" subject to the requirements of 5 USC 553(b) and is therefore not subject to the Regulatory Flexibility Act.

## F. Unfunded Mandates Reform Act

Section 201 of the Unfunded Mandates Reform Act (UMRA), Public Law 104-4, generally requires Federal agencies to assess the effects of their "regulatory actions" (defined to be the same as "rules" subject to the RFA) on tribal, state and local governments and the private sector. The permit issued today, however, is not a "rule" subject to the RFA and is therefore not subject to the requirements of UMRA.

## G. Executive Order 12898, Environmental Justice

Executive Order 12898 (59 Fed. Reg. 7629, February 11, 1994), entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" ("EJ Order"), requires federal agencies to identify and address environmental justice issues in all actions that, "substantially affect human health or the environment." EPA defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including any racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. EPA-NE is committed to promoting and supporting environmental justice, and we encourage all the New England States to do the same.

One of the most effective ways to address environmental justice is to ensure that all communities have an opportunity for meaningful involvement in the regulatory process. To this end, EPA-NE has worked with the States and many communities in New England to: (1) facilitate public access to information on the localized impacts and health risks associated with environmental programs, (2) enhance public outreach efforts to groups and coalitions most interested in local environmental quality issues, as well as to communities that may have less access to publicly available information (for example, due to language barriers or lack of access to the internet), and (3) utilize to the fullest extent existing mechanisms for public participation in the regulatory decision making process. In addition, EPA actively encourages the States to develop and implement environmental justice policies in their environmental programs.

EPA is today proposing the remediation general permit (RGP). In the development of this permit, EPA worked to identify and to advance efforts and to implement directives to ensure fair and equitable treatment of all MA and NH citizens with respect to matters involving public health and the environment. EPA and both NH and MA have active EJ programs, including policies and activities that ensure that programs, permits, policies and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies and

activities, because of their race, color, national origin or economic status.

## XV. References

The following is a list of references used to develop the Remediation General Permit. References are to the major groupings of information used to support this permit and are not a complete listing of individual references: for example, the standards used to develop the "existing standards" table for the permit are a file collection of many individual EPA and State of NH and MA standards.


1. 40 CFR Parts 122, 124, 131 (NPDES), July 2000, and Parts 401 - 471 (effluent guidelines), July 2001.

2. Various Standards for Water Quality (see listing included in Appendix with the tables for the available standards for the permit parameters and also the notebook with all the standards extracted for use in this permit):
a. National Recommended Water Quality Criteria: 2002; *EPA-822-R-02-047;* November 2002.
b. 2002 Edition of the Drinking Water Standards and Health Advisories; EPA 822-R-02-038, Summer 2002 and EPA 816-F-01-007, March 2001.
c. Notice of Availability, Revision of National Recommended Water Quality Criteria; 67 FR 79091 - 79095, December 27, 2002.
d. Water Quality Criteria for Methylmercury, updated August 13, 2003.
e. Methylmercury Criteria Document, EPA-823-R-01-001, January 2001.
f. State of New Hampshire Surface Water Quality Regulations, Chapter 1700; December 3, 1999.
g. Drinking Water Standards and Advisories, EPA, 2002.
h. National Primary Drinking Water Standards, EPA 816-F-01-007, March 2001.
i. Current Drinking Water Standards, www.epa.gov/safewater/mcl.html, April 8, 2002.
j. New Hampshire Groundwater Quality Standards, Env-Wm 1403, adopted Feb. 23, 1999.
k. New Hampshire Soil Standards - Petroleum, Env-Wm 412, adopted Nov. 20, 1996.
l. Massachusetts Method I Groundwater Standards, 314 CMR 40.0974(2), draft Dec. 20, 2001.
m. New Hampshire Water Quality Criteria for Toxic Substances, Env-Wm 1703.21, adopted Dec. 3, 1999.
n. Massachusetts Surface Water Quality Standards, 314 CMR 4.00; July 2001, (corrected May 12, 2000).

3. Compilation of Data on Chemicals extracted from the "Toxnet" web site of the National Library of Medicine and the National Institute of Health. Web site is www.toxnet.nlm.nih.gov, and the most used section of the site is the "Hazardous Substances Data Bank" or HSDB.

a. 2- chloronaphthalene
b. 2-mthylnaphthalene
c. (2-ethylhexl)phthalate
d. dimethylphthalate
e. diethylphthalate
f. butyl benzyl phthalate
g. phenol
h. pentachlorophenol
i. tetrachloroethylene
j. methyl ethyl ketone
k. tetrahydrofuran
l. chlorinated organics
m. dichlorodiflouromethane
n. chlorodibromomethane
o. bromodichloromethane
p. chlorobromomethane
q. trichloroflouromethane
r. dichlorotriflouroethane
s. 2,2-dichloro2,2,2-triflouroethane
t. dichloromethane
u. 1,1,1-trichloro-2,2,2-triflourethane
v. 1,1,1-trichlorethane
w. beryllium compounds
x. antimony compounds
y. acrylonitrile
z. 1,1,2,2-tetrachloroethane
aa. 1,2-dichloropropane
bb. Methyl t-butyl ether
cc. Trichloroethylene
dd. 1,2-dichloroethylen
ee. acetone
ff. 1,4-dioxane
gg. Styrene
hh. Polycyclic Aromatic Hydrocarbons (PAH) - Group I
    i) benz(a)anthracene
    ii) benzo(a)pyrene
    iii) benzo(b)flouranthene
    iv) benzo(k)flouranthene
    v) chrysene
    vi) dibenz(a,h)anthracene
    vii) ideno(1,2,3-cd)pyrene
ii. Polycyclic Aromatic Hydrocarbons (PAH) - Group II
    i) acenaphthene
    ii) Acenaphthylene
    iii) Anthracene
    iv) Benzo(ghi)perylene
    v) flouranthene
    vi) flourene
    vii) phenanthene
    viii) pyrene
jj. T-Butyl Alcohol
kk. ethylene dibromide
ll. tetramethyl lead
mm. tetraethyl lead
nn. potassium cyanide

4. Existing General Permits including:
   a. “Stormwater Multi-Sector General Permit for Industrial Activities,” Federal Register, Monday, October 30, 2000.
   b. EPA Construction General Permit, dated July 1, 2003.
   c. “Construction Dewatering Activity Discharges in MA and NH, general permit issued by Region I, September 23, 2002 (67 FR 59503).
   d. Assorted documents, including: “Background for Hydrotesting General Permit.”
   e. EPA’s “Model NPDES Permit for Discharges Resulting From The Cleanup of Gasoline Released From Underground Storage Tanks,” June 1989.
   f. Various state issued permits including:
      i. New Jersey, permit #NJ0102709, Dec. 1, 1998;
      ii. Rhode Island, general permits for: gasoline contaminated groundwater, June 23, 1998, and groundwater contaminated with #2 fuel oil, June 1, 1999;
      iii. Vermont, permit #VTG910001, Sept. 13, 2002;
      iv. Connecticut, draft, Feb. 5, 2004;
      v. NPDES General Permits for Discharges Resulting from Implementing Corrective Action Plans for the Cleanup of Petroleum Underground Storage Tank Systems in Texas (TXG830000), Louisiana (LA830000), Oklahoma (OKG830000), and New Mexico (NMG830000); 62 FR 61116 - 61125, Nov. 14, 1997, renewed Oct. 2, 2002; Final.
      vi. Arkansas, permit #ARG790000;
      vii. Pennsylvania, general permit PAG-5, August 1999;
      viii. West Virginia, permit #WV0113727.
      ix. Proposed NPDES General Permit for Discharges from Hydrostatic Testing of New and Existing Natural Gas Pipelines in Texas (TXG670000) , Oklahoma (OKG670000), and New Mexico (NMG670000).
      x. Statewide General NPDES Permit of Discharges from Utility Vaults and Underground Structures to Surface Waters, California General Permit CAG990002.
      xi. General Permit for the Discharge of Groundwater Remediation Wastewater Directly to Surface Water, Draft, Feb. 5, 2004.

5. Applications (primarily from June 2002 to present, approx. 300 files) and associated discharge monitoring reports received from discharge activities pursuant to approved site remediation projects (over 1000 reports) (see Program Guidance Binder Dec 2003 and other files as well as the individual files for discharge activities).

6. Massachusetts Contingency Plan (310 CMR 40.0000), Chapter 21E MA state laws, MADEP volatile petroleum hydrocarbons/extractable petroleum hydrocarbons (VPH/EPH) Method for Petroleum Contaminated Sites. “Characterizing Risks Posed by Petroleum Contaminated Sites: Implementation of the Massachusetts DEP’s VPH/EPH Approach,” Final Policy, October 31, 2002.

7. New Hampshire Permits and Regulations, including: Temporary Surface Water Permits and Applications; NH Rules Part Env-Ws 412, Reporting and Remediation of Oil Discharges; NH Rules Part Env-Ws 401-401, Surface Water Discharge Permit Regulations; NH Rules Part Env-Wm 1403, Groundwater Management and Groundwater Release Detection Permits.

8. "Basics of Pump and Treat Ground Water Remediation Technology," EPA/600/8-90/003; March 1980.

9. Various articles and data collected to support Gasoline Oxygenate discussion and background on gasoline in general, including:
a. "Evaluation of the Health Effects From Exposure to Gasoline and Gasoline Vapors, Final Report," Northeast States for Coordinated Air Use Management (NESCAUM), Air Toxics Committee; August 1989.
b. "Summary Report and Compiled Results of the Survey of State Experiences with MtBE and Other Oxygenate Contamination at LUST Sites (March-April 2003)," A Project of the New England Interstate Water Pollution Control Commission (NEIWPCC); August 2003.
c. L.U.S.T.Line, "A Report On Federal & State Programs to Control Leaking Underground Storage Tanks," Bulletin 44, New England Interstate Water Pollution Control Commission (NEIWPCC), July 2003.
d. L.U.S.T. Line Bulletin 34, "Tertiary Butyl Alcohol (TBA), MtBE May Not Be the Only Gasoline Oxygenate You Should Be Worrying About," New England Interstate Water Pollution Control Commission (NEIWPCC), February 2000.
e. L.U.S.T. Line Bulletin 37, "A Circle Vicious, What Do We Know About the Other Oxygenates?" New England Interstate Water Pollution Control Commission (NEIWPCC) March 2001.
f. L.U.S.T. Line Bulletin 42, "Analytical Methods for Fuel Oxygenates," New England Interstate Water Pollution Control Commission (NEIWPCC); October 2002.
g. Drinking Water Action Levels: Chemicals with Recent Detections; California Dept. of Health Services; June 12, 2003.
h. Memorandum re: "Interim Drinking Water Action Level for tertiary-butyl alcohol (TBA)," from Stewart Chute and Gary Ginsberg, Toxicologists, Connecticut Dept. of Health to Elsie Patton, Acting Director, Connecticut Dept. of Environmental Protection; July 2, 2003.
i. TBA discharge limit in "Temporary Surface Water Discharge Permit TSWP-198903003-N-001 (DES#198903003-LUST-WLP-1)," Sept. 11, 2003.
j. July 19, 2002 Telephone Fascimile from GeoInsight, Inc., to John Hackler, US EPA-NE, re: NPDES Exclusion Application oxygenate removal at Peterborough Oil Company, Inc., Dover, NH.
k. July 26, 2002 Letter from Roger Janson, Associate Director, Surface Water Programs, US EPA, Region I, to GeoInsight, Inc., re: the Peterborough Oil Company site in Dover, NH.
l. Compilation of Groundwater Oxygenate Cleanup Levels for LUST Sites; Delta

Environmental Consultants, Inc., Sept. 20, 2002.
m. "Achieving Clean Air and Clean Water: The Report of the Blue Ribbon Panel on Oxygenates in Gasoline," EPA 420-R-99-021; Sept. 15, 1999.
n. July 26, 2002 Permit Closeout Letter from ExxonMobil in Hampton, NH, to Bronislav Karnauck, Surface Water Permit Coordinator, New Hampshire Dept. of Environmental Services, re: Permit TSWP 199812237-01 - Elevated Concentrations of the oxygenates TBA and TAME.
o. MTBE Fact Sheet #2: Remediation of MTBE Contaminated Soil and Groundwater; EPA 510-F-97-015; January 1998.
p. Fact Sheet: "Drinking Water Advisory: Consumer Acceptability Advice and Health Effects Analysis of Methyl Tertiary-Butyl Ether (MTBE)," EPA-822-F-97-009.
q. EPA's Reformulated Gasoline (RFG) Property and Performance Averages for Boston-Worcester, MA, and Manchester, NH; www.epa.gov/otaq/regs/fuels/rfg/properf, 9/12/03.
r. EPA Information on Methyl Tertiary Butyl Ether (MTBE) in Gasoline; www.epa.gov/mtbe/gas.htnm. 9/16/03.
s. Electronic mail from Donald Gonyea, Connecticut Dept. of Environmental Protection, to John Hackler, US EPA-NE, re: Proposed bill to eliminate MTBE as a gasoline additive in CT by July 1, 2004; Oct. 30, 2003.
t. Electronic mail from Hal White, US EPA, Office of Underground Storage Tanks, re: the timing and probability of EPA developing a drinking water standard for MTBE; 10/30/02.
u. Environmental Behavior and Fate of Methyl tertiary Butyl Ether (MTBE); US Dept. of the Interior - US Geological Survey, National Water Quality Assessment Program; Fact Sheet FS-203-96; revised Feb. 1998.
v. MtBE Treatment Profiles at various facilities around the United States; http://clu-in.org/products/mtbe/usersearch/mtbe_search.cfm; EPA Office of Technology Innovation and the Office of Underground Storage Tanks; May 10, 2002.
w. Electronic mail from Christine Hawk, US EPA, to Jane Downing, US EPA - Region I, re: Examples of MTBE water contamination and large scale studies; 11/27/01.
x. EPA Consumer Fact Sheet on Ethylene Dibromide (EDB); www.epa.gov/safewater/dwh/c-soc/ethylene.html July 18, 2002.
y. ToxFAQs for 1,2-Dibromoethane; Agency for Toxic Substances and Disease Registry (ATSDR); www.atsdr.cdc.gov/tfacts37.html; July 18, 2002.
z. Material Safety Data Sheet (MSDS) for Gasoline; T.W. Broin Oil Company, Inc., Ventura, CA; http://www.brownoil.com/msdsgasoline.htm; Oct. 21, 2002.

10. Toxicological Profile for Fuel Oils, ATSDR, Nov 29, 1993.

11. Application of Metals Limitations (from various Region I issued individual permits using dilution factors, hardness, etc.)

12. Reporting Levels for Data and Test Methods (from monitoring data sent to Region I).

13. Treatment Technology (examples contained in applications and monitoring reports).

14. Endangered Species (ESA) and Essential Fish Habitat (EFH) (see marked file), including:
a. May 10, 2000 EPA Memorandum from Michael B. Cook, Director of the Office of Wastewater Management, Office of Water, to Water Division Directors, Regions I - X .
b. "Memorandum of Agreement Between the Environmental Protection Agency, Fish and Wildlife Service and National Marine Fisheries Service Regarding Enhanced Coordination Under the Clean Water Act and Endangered Species Act," EPA-823-F-01-002, February 2001.

15. Anti-Degradation, including:
a. EPA's Antidegradation Policy, 40 CFR Section 131.12;
b. "Policy Guidance on Massachusetts' Surface Water Quality Standards (314 CMR 4.00), Antidegradation Provisions in Section 4.04," effective July 20, 1990; ~~and~~
c. "Massachusetts Antidegradation Review Procedures for Discharge Requiring a Permit Under 314 CMR 3.03," Revised 1993.
d. New Hampshire's antidegradation provisions found in Chapter 1700 Part ENV-Ws 1708 SURFACE WATER QUALITY REGULATIONS.

16. Toxicity or WET testing, including:
a. March 2, 1994 EPA-NE Policy Memorandum, re: "Minor POTW Toxicity Policy," from Edward k. McSweeney, Chief of the Wastewater Management Branch, Office of Ecosystem Protection, to Wastewater management Branch Section Chiefs and Permit Engineers/Writers.
b. March 3, 1995 EPA-NE Policy Memorandum, re: "Whole Effluent Toxicity Testing Strategy for High Dilution NPDES Permits," from Edward k. McSweeney, Chief of the Wastewater Management Branch, Office of Ecosystem Protection, to Ronald Manfredonia, Chief of the Water Quality Branch, Larry Brill, Chief of the Compliance Branch, David Fierra, Director of the Water Division.
c. May 12, 1995 EPA-NE Policy Memorandum, re: "Reduction in WET Frequency," from Edward K. McSweeney, Chief of the Wastewater Management Branch, Office of Ecosystem Protection, to Wastewater management Branch Section Chiefs and Permit Writers.
d. May 24, 1994 EPA-NE Policy Memorandum, re: "Monitoring Frequency WET Tests," from Edward K. McSweeney, Chief of the Wastewater Management Branch, Office of Ecosystem Protection, to Wastewater Management Branch Section Chiefs and Permit Engineers/Writers.

17. Region I policy on Dredging Drainback Waters (see file), including: July 24, 2002 Letter from Roger Janson, Associate Director, Surface Water Programs, Office of Ecosystem Protection, Region I, to Ms. Christine Godfrey, Chief of the Regulatory Division, US Army Corps of Engineers, and Mr. Glenn Haas, Director of the Division of Watershed Management, MA Department of Environmental Protection, re: Discharge of Dredged Material Drainback Waters at MA 21E Remediation Sites.

18. Excerpt from “How to Evaluate Alternative Cleanup Technologies for Underground Storage Tank Sites, A Guide to Corrective Action Plan Reviewers,” EPA 510-B-95-007; May 1995.

19. EPA Drinking Water Fact Sheet, Advisory for MtBE; EPA 822-F-97-009.

20. Ambient Water Quality Criteria for Cyanide - 1984; EPA 440/5-84-028; January 1985.

21. Article Re: flame retardants, e.g., polybrominated diphenyl ethers (PBDEs); USA Today; Oct. 27, 2003.

22. Ambient Water Quality Criteria for Naphthalene; EPA 440/5-80-059; Oct. 1980.

23. “EPA’s Emergency Planning and Community Right to Know Act - Section 313: Guidance for Reporting Toxic Chemicals: Polycyclic Aromatic Compound (PAC) Category,” EPA 260-B-01-03; August 2001.

24. EPA-NE’s “Optimum Minimum Levels (M.L.s) for Inorganic Priority Pollutants,” March 27, 2002.

## XVI. Fact Sheet Appendix A - Existing Water Quality Standards