

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act, as amended, (33 U.S.C. §§1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§ 26-53)

Simon Property Group/Emerald Square Mall

is authorized to discharge from the facility located at

**999 South Washington Street
Route 1 at Route I-295
North Attleboro, MA 02760**

to receiving water named

wetlands adjacent to the channel of the Sevenmile River (MA52-07)

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

This permit shall become effective upon signature.

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

This permit consists of 10 pages in Part I including effluent limitations and monitoring requirements, and 25 pages in Part II including General Conditions and Definitions.

Signed this 1st day of July, 2010

/S/ SIGNATURE ON FILE

Stephen S. Perkins, Director
Office of Ecosystem Protection
Environmental Protection Agency
Region I
Boston, MA

Glenn Haas, Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

PART I

Part I.A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through expiration the permittee is authorized to discharge from **Outfall Serial Number 001 (located at the outlet of wetland cell #3 of the upper detention basin and wetlands cells, prior to entering into the drainage pipe running under the Whispering Pines Trailer Park)**, treated storm water runoff from on-site and off-site drainage areas designated as the upper watershed. Such discharge shall: 1) be limited and monitored by the permittee as specified below; and 2) not cause a violation of the State Surface Water Quality Standards of the receiving water.

Effluent Characteristic	Units	Discharge Limitation	Monitoring Requirements ^{1,2}	
		Maximum Daily	Measurement Frequency	Sample Type
Flow	MGD	Report	1/quarter	Estimate ³
pH	S.U.	6.5 - 8.3 ⁴	1/quarter	Grab
Total Suspended Solids (TSS)	mg/L	30	1/quarter	Grab
Oil and Grease	mg/L	5	1/quarter	Grab
Lead, Total	ug/L	20	1/quarter	Grab
Copper, Total	ug/L	7.5	1/quarter	Grab
Zinc, Total	ug/L	65	1/quarter	Grab

See page 4 for explanation of footnotes.

Part I.A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

2. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from **Outfall Serial Number 002 (located at the outlet of wetland cell #3 of the lower wetland cells, prior to entering off-site existing natural wetlands)** treated storm water runoff from on-site and off-site drainage areas designated as the lower watershed. Such discharge shall: 1) be limited and monitored by the permittee as specified below; and 2) not cause a violation of the State Surface Water Quality Standards of the receiving water.

Effluent Characteristic	Units	Discharge Limitation	Monitoring Requirements ^{1,2}	
		Maximum Daily	Measurement Frequency	Sample Type
Flow	MGD	Report	1/quarter	Estimate ³
pH	S.U.	6.5 - 8.3 ⁴	1/quarter	Grab
Total Suspended Solids (TSS)	mg/L	30	1/quarter	Grab
Oil and Grease	mg/L	5	1/quarter	Grab
Lead, Total	ug/L	20	1/quarter	Grab
Copper, Total	ug/L	7.5	1/quarter	Grab
Zinc, Total	ug/L	65	1/quarter	Grab

See page 4 for explanation of footnotes.

Footnotes:

1. Samples taken in compliance with the monitoring requirements specified above shall be taken at a point representative of the discharge through the outfall, prior to mixing with the receiving waters. For Outfall Serial Number 001, sample shall be taken at the outlet of wetland basin #3 of the upper detention basin and wetlands cells, prior to entering into the drainage pipe running under the Whispering Pines Trailer Park. For Outfall Serial Number 002, sample shall be taken at the outlet of wetland basin #3 of the lower wetland cells, prior to entering off-site existing natural wetlands. All samples shall be tested in accordance with the procedures in 40 CFR Part 136, unless specified elsewhere in the permit. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP. The permittee shall submit the results to EPA of any additional testing, if it is conducted in accordance with EPA approved methods consistent with the provisions of 40 CFR § 122.41(1)(4)(ii).
2. Samples must be taken only during wet weather, defined as a storm event with greater than 0.10 inches of precipitation that is preceded by a 72 hour period of dry weather, defined as less than 0.10 inch of precipitation. Grab samples shall be taken during the first thirty minutes of the discharge. If collection of grab sample(s) during the first thirty minutes is impracticable, grab sample(s) can be taken as soon after that as possible, and the permittee shall submit with the Discharge Monitoring Report (DMR) a description of why the collection of the grab sample(s) during the first thirty minutes was impracticable. A “no discharge” report shall be submitted for those sampling periods in which there is no discharge. When adverse climatic conditions preclude the ability to sample, the permittee shall submit a report citing the conditions which prevented sampling with that quarter’s DMR. All records pertaining to sampling and all copies of DMRs shall be kept as part of the permittee’s Stormwater Pollution Prevention Plan (SWPPP) developed pursuant to Part I.B of this permit.
3. Flow shall be reported as an estimate of the volume of runoff discharging from each wetlands cell in million gallons per day. The permittee shall record and report with that quarter’s DMR and record in its SWPPP the following: (1) the date and duration of the storm event, (2) the antecedent dry period (time elapsed in hours since the last measurable storm greater than 0.10 inches), and (3) the total precipitation accumulated, in inches, during the wet weather event.
4. The pH of the effluent shall not be less than 6.5 SU, nor greater than 8.3 SU at any time, unless these values are exceeded due to natural causes. The pH shall be no more than 0.5 units outside the natural background range. To demonstrate that pH values of the effluent are outside the permitted pH range due to natural causes, the permittee must show that pH measurements of the source water and the effluent are the same. When the values are exceeded due to natural causes, documentation of such conditions must be submitted by the permittee with the quarterly DMR and recorded in the SWPPP.

PART I.A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (cont'd)

3. The discharge shall not cause a violation of the water quality standards of the receiving waters.
4. The discharge shall not cause objectionable color, odor, or turbidity to the receiving waters.
5. The discharge shall not contain a visible oil sheen, foam, or floating solids at any time.
6. The effluent shall not contain materials in concentrations or in combinations which are hazardous or toxic to aquatic life or which would impair the uses designated by the classification of the receiving waters.
7. If the permit is modified or reissued, it shall be revised to reflect all currently applicable requirements of the CWA.
8. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:
 - a. That any activity has occurred or will occur which would result in the discharge, on a routine basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - (1) One hundred micrograms per liter (100 µg/l);
 - (2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
 - (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or
 - (4) Any other notification level established by the Director in accordance with 40 CFR §122.44(f).
 - b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - (1) Five hundred micrograms per liter (500 µg/l);
 - (2) One milligram per liter (1 mg/l) for antimony;
 - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7);

- (4) Any other notification level established by the Director in accordance with 40 CFR § 122.44(f).
 - c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.
9. Toxics Control
- a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.
 - b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

Part I.B. STORMWATER POLLUTION PREVENTION PLAN

1. The permittee shall develop, implement, and maintain a Stormwater Pollution Prevention Plan (SWPPP) designed to reduce, or prevent, the discharge of pollutants in stormwater to the receiving waters identified in this permit. The SWPPP shall be a written document that is consistent with the terms of this permit. Development guidance and a recommended format for the SWPPP are available on the EPA website for the Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activities (<http://cfpub.epa.gov/npdes/stormwater/msgp.cfm>). The permittee shall comply with the terms of its SWPPP.
2. The SWPPP shall be completed and certified by the permittee **within 90 days after the effective date of this permit**. The permittee shall certify that its SWPPP has been completed or updated and shall be signed in accordance with the requirements identified in 40 CFR §122.22. A copy of this initial certification shall be sent to EPA and MassDEP **within one hundred and twenty (120) days of the effective date of this permit**.
3. The SWPPP shall be prepared in accordance with good engineering practices and shall be consistent with the general provisions for SWPPPs included in the most current version of the MSGP. In the current MSGP (effective September 29, 2008, modified May 27, 2009), the general SWPPP provisions are included in Part 5. Specifically, the SWPPP shall document the selection of, and, if necessary, the design and installation of, Best Management Practices and contain the elements listed below:
 - a. A pollution prevention team with collective and individual responsibilities for developing, implementing, maintaining, revising and ensuring compliance with the SWPPP.
 - b. A site description which includes the activities at the facility; a general location map showing the facility, receiving waters, and outfall locations; and a site map showing the extent of significant structures and impervious surfaces, directions of stormwater flows, and locations of all existing structural control measures, stormwater conveyances,

pollutant sources (identified in Part 3.c. below), stormwater monitoring points, stormwater inlets and outlets, and industrial activities exposed to precipitation such as, storage, disposal, material handling.

- c. A summary of all pollutant sources which includes a list of activities exposed to stormwater, the pollutants associated with these activities, a description of where spills have occurred or could occur, a description of non-stormwater discharges, and a summary of any existing stormwater discharge sampling data.
 - d. A description of all stormwater controls, both structural and non-structural.
 - e. A schedule and procedure for implementation and maintenance of the control measures described above and for the quarterly inspections and best management practices (BMPs) described below.
4. The SWPPP shall document the appropriate best management practices (BMPs) implemented or to be implemented at the facility to minimize the discharge of pollutants in stormwater to waters of the United States and to satisfy the non-numeric technology-based effluent limitations included in this permit. At a minimum, these BMPs shall be consistent with the control measures described in the most current version of the MSGP. In the current MSGP (effective September 29, 2008, modified May 27, 2009), these control measures are described in Part 2.1.2. Specifically, BMPs must be selected and implemented to satisfy the following non-numeric technology-based effluent limitations:
- a. Minimizing exposure of manufacturing, processing, and material storage areas to stormwater discharges.
 - b. Good housekeeping measures designed to maintain areas that are potential sources of pollutants.
 - c. Preventative maintenance programs to avoid leaks, spills, and other releases of pollutants in stormwater discharged to receiving waters.
 - d. Spill prevention and response procedures to ensure effective response to spills and leaks if or when they occur.
 - e. Erosion and sediment controls designed to stabilize exposed areas and contain runoff using structural and/or non-structural control measures to minimize onsite erosion and sedimentation, and the resulting discharge of pollutants.
 - f. Runoff management practices to divert, infiltrate, reuse, contain, or otherwise reduce stormwater runoff.
 - g. Proper handling procedures for salt or materials containing chlorides that are used for snow and ice control.

5. All areas with industrial materials or activities exposed to stormwater and all structural control used to comply with effluent limits in this permit shall be inspected, at least once per quarter, by qualified personnel with one or more members of the stormwater pollution prevention team. Inspections shall begin during the 1st full quarter after the effective date of this permit. EPA considers quarters as follows: January to March; April to June; July to September; and October to December. Each inspection must include a visual assessment of stormwater samples (from each outfall), which shall be collected within the first 30 minutes of discharge from a storm event, stored in a clean, clear glass or plastic container, and examined in a well-lit area for the following water quality characteristics: color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of pollution. The permittee shall document the following information for each inspection and maintain the records along with the SWPPP:
 - a. The date and time of the inspection and at which any samples were collected;
 - b. The name(s) and signature(s) of the inspector(s)/sample collector(s);
 - c. If applicable, why it was not possible to take samples within the first 30 minutes;
 - d. Weather information and a description of any discharges occurring at the time of the inspection;
 - e. Results of observations of stormwater discharges, including any observed discharges of pollutants and the probable sources of those pollutants;
 - f. Any control measures needing maintenance, repairs or replacement; and,
 - g. Any additional control measures needed to comply with the permit requirements.
6. The permittee shall amend and update the SWPPP within 14 days of any changes at the facility that result in a significant effect on the potential for the discharge of pollutants to the waters of the United States. Such changes may include, but are not limited to: a change in design, construction, operation, or maintenance, materials storage, or activities at the facility; a release of a reportable quantity of pollutants as described in 40 CFR Part 302; or a determination by the permittee or EPA that the BMPs included in the SWPPP appear to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with industrial activity.
7. Any amended, modified, or new versions of the SWPPP shall be re-certified and signed by the permittee in accordance with the requirements identified in 40 CFR §122.22. The permittee shall also certify, at least annually, that the previous year's inspections and maintenance activities were conducted, results recorded, records maintained, and that the facility is in compliance with this permit. If the facility is not in compliance with any aspect of this permit, the annual certification shall state the non-compliance and the remedies which are being undertaken. Such annual certifications also shall be signed in accordance with the requirements identified in 40 CFR §122.22. The permittee shall maintain at the facility a copy of its current SWPPP and all SWPPP certifications (the initial certification, re-certifications, and annual certifications) signed during the effective period of this permit, and shall make these available for inspection by EPA and MassDEP. In addition, the permittee shall document in the SWPPP any violation of numerical or non-numerical stormwater effluent limits with a date and description of the corrective actions taken.

Part I.C. REOPENER CLAUSES

1. This permit shall be modified, or alternately, revoked and reissued, to comply with any applicable standard or limitation promulgated or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - a. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - b. Controls any pollutants not limited in the permit.

Part I.D. MONITORING AND REPORTING

Monitoring results obtained during each quarter shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the month following the reporting period. The DMR forms must be accompanied by documentation describing the wet weather event climatological characteristics, which include but are not limited to, the date and duration of the storm event, the duration of the antecedent dry period, and the total precipitation accumulated, in inches, during the wet weather event.

Signed and dated originals of these, and all other reports required herein, shall be submitted to the Director and the State at the following addresses:

U.S. Environmental Protection Agency
Water Technical Unit (SMR-04)
5 Post Office Square - Suite 100
Boston, MA 02109-3912

MassDEP - Southeast Regional Office
Bureau of Resource Protection
20 Riverside Drive
Lakeville, MA 02347

In addition, copies of all signed and dated Discharge Monitoring Reports shall be submitted to the following address:

Massachusetts Department of Environmental Protection
Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, MA 01608

Part I.E. STATE PERMIT CONDITIONS

1. This discharge permit is issued jointly by the EPA and the MassDEP under Federal and State law, respectively. As such, all the terms and conditions of this permit are hereby incorporated

into and constitute a discharge permit issued by the Commissioner of the MassDEP pursuant to M.G.L. Chap. 21, §43.

2. Each Agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of this permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared, invalid, illegal or otherwise issued in violation of State law such permit shall remain in full force and effect under Federal law as a NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of Federal law, this permit shall remain in full force and effect under State law as a permit issued by the Commonwealth of Massachusetts.

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
FIVE POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912**

FACT SHEET

**DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO
THE CLEAN WATER ACT (CWA)**

NPDES PERMIT NUMBER: **MA0030244**

PUBLIC NOTICE START AND END DATES:

NAME AND MAILING ADDRESS OF APPLICANT:

**Simon Property Group/Mayflower Emerald Square LLC
999 South Washington Street
North Attleboro, MA 02760**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**Emerald Square Mall
Route 1 at Route I-295
999 South Washington Street
North Attleboro, MA 02760**

RECEIVING WATER(S): **Wetlands adjacent to the channel of the Sevenmile River**

RECEIVING WATER CLASSIFICATION(S): **Class A**

SIC CODES: **5311 - retail-department stores, 5399 - retail-misc general merchandise stores, 5651 - retail-family clothing stores, and 5812 - retail-eating places**

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

The above named applicant has requested that the U.S. Environmental Protection Agency reissue its NPDES permit to discharge stormwater runoff into the designated receiving waters (wetlands adjacent to the stream channel of the Sevenmile River).

Emerald Square Mall (“the Facility”) is a regional shopping mall which discharges stormwater runoff from parking lot drainage areas and the roofs of buildings through a treatment system consisting of the following:

- Oil/water separators;
- Detention pond;
- Coarse screening; and
- Three wetland treatment cells.

As further described in Section 3 of this Fact Sheet, the treated effluent is discharged via two outfalls into wetlands adjacent to the Sevenmile River. Attachment A includes Figure 1, the Site Locus, and Figure 2, which shows the basic layout of the facility in relation to highways and waterbodies. Attachment B includes the *Emerald Square Drainage Maintenance Plan*, which shows the site layout, drainage areas, stormwater collection system, wetlands cells, and outfalls.

2. Permitting History

Massachusetts Environmental Policy Act (MEPA) regulations require completion of an Environmental Impact Report (EIR) for projects discharging to a Class A waterbody. Therefore, at the time the Emerald Square Mall project was proposed in the late 1980s, its proponents were required to develop an EIR. As a result of the EIR process, the original NPDES permit contained a requirement for a detailed Best Management Practices Plan (BMPP) in addition to numerical limits for a wide array of chemical contaminants.

The original permit was issued on April 21, 1989. At the time of the original permit development, with the exception of EPA’s 1983 National Urban Runoff Program (NURP) Study, there was a lack of a comprehensive database for stormwater runoff. EPA had not yet promulgated technology guidelines applicable to the Facility or stormwater runoff guidelines for commercial facilities. As a result, the effluent limitations and monitoring frequency defined in the original permit were based on water quality and water supply protection considerations as well as Best Professional Judgment. EPA attempted to predict the critical parameters that would be found in the stormwater runoff from the site. Due to the uncertainty of the components that might be found in stormwater, the permit originally included monitoring for many more parameters than those in this Draft Permit. The original permit also included a provision that, after a minimum of 12 months of comprehensive monitoring, the permittee could request less stringent monitoring requirements.

The NPDES permit issued on September 30, 1994 included effluent limitations and monitoring requirements for pH, flow, TSS, oil & grease, PAHs, total lead, total copper, total zinc, and freshwater acute toxicity testing. This permit removed monitoring requirements and limits for total phosphorus, Total Kjeldah Nitrogen, benzene, total BETXs (benzene, ethyl benzene,

toluene, and total xylenes), total cadmium, total chromium, nickel, and priority pollutants (as listed in 40 CFR Part 136, Methods 642 and 625).

The NPDES permit issued in 1994 was modified in September 1996 to remove monitoring requirements for polynuclear aromatic hydrocarbons (PAHs) and required toxicity tests, as well as to reduce the sampling frequency from monthly to quarterly. It should be noted that the original 1989 permit established a monitoring requirement for PAHs and required toxicity tests because refined petroleum products, including gasoline and motor oil, contain numerous types of hydrocarbon compounds, such as benzene, toluene, ethylbenzene, xylene and PAHs, and can be found in runoff from areas such as shopping mall parking lots. Each of these compounds has the potential for causing adverse health effects, including, but not limited to, cancer, mutations, and chronic toxic effects of the liver, kidney, heart and nervous system. After review of monitoring data by EPA, the requirements for PAH testing and acute whole effluent toxicity testing were eliminated from the permit through the September 1996 modification because, according to the May 24, 1996 Fact Sheet, “the treatment provided by the wetland stormwater treatment system has consistently reduced pollutant effluent loadings to the level which are protective of downstream waters.” This modified NPDES permit took effect September 18, 1996.

The NPDES permit issued on September 30, 1999 expired five years from the effective date. In order to satisfy the antibacksliding requirements as stipulated in 40 CFR §122.44 (1), the contaminants and respective discharge limitations required in the 1996 modification remained in the 1999 permit.

The current permit was issued on November 1, 2004, and expired five years from the effective date (November 1, 2009). The 2004 permit added a pH limit range to meet State Water Quality Standards as required under 314 CMR § 4.05 (3)(a)3. The 2004 permit reduced the maximum daily effluent limitation for copper from 45 µg/L to 17.5 µg/L and reduced the maximum daily effluent limitation for zinc from 130 µg/L to 65 µg/L.

3. Description of Treatment System and Discharge

The Facility discharges stormwater, as defined in 40 CFR § 122.26(b)(13) to mean “stormwater runoff, snow melt runoff and surface runoff and drainage,” which may contain a wide range of contaminants. The concentrations of such contaminants are generally site specific and therefore may vary greatly from site to site. For this Draft Permit, the pollutants of concern include total suspended solids (TSS), total lead, total copper, total zinc, pH, and oil and grease.

Emerald Square Mall site stormwater is collected from two separate drainage areas. The upper portion of the site, which includes the upper parking areas, the upper off-site areas and the Mall’s major roof areas, drains to the stormwater collection system, which includes oil/water separators, and then flows to an upper detention basin and wetlands cells. The overflow from the basin travels through a series of three manmade wetland cells. The final cell dumps into a 12" diameter pipe which drains under Allen Avenue and leads to an old 24" x 30" stone culvert. The culvert passes under Route 1 and discharges into a small unnamed pond at the Whispering Pines Mobile Home Park. The overflow from the pond flows into an unnamed wetland adjacent to the Sevenmile River. The outlet from the upper wetland cell #3, prior to the entering the drainage

pipe running under the Whispering Pines Trailer Park, is designated Outfall 001 and is shown on Attachment A, Figure 2, and Attachment B.

The second area drains the stormwater through the collection system (including oil/water separators) into the lower detention basin. The overflow from this basin travels through a pair of 30" concrete culverts under Route 1. The flow continues to a wetland channel about 400 feet in length, through a series of three manmade wetland cells, discharges to an unnamed wetland adjacent to the Sevenmile River. The outlet of lower wetland cell #3 is designated Outfall 002 and is shown on Attachment A, Figure 2, and Attachment B.

The facility's discharge reaches the Sevenmile River at a location upstream of the Luther Reservoir inlet adjacent to the river channel. The Luther Reservoir is used as part of the drinking water supply for the City of Attleboro.

A summary of the discharge, based on discharge monitoring data from October 1, 2004 through June 30, 2009 for Emerald Square Mall Outfalls 001 and 002, is presented in Attachment C. These data were collected under the terms of the 2004 permit.

4. Receiving Water Description

The Emerald Square Mall discharges to wetlands that are adjacent to and hydrologically connected to the Sevenmile River (Massachusetts waterbody segment ID MA52-07). The Sevenmile River originates at the outlet of Hoppin Hill Reservoir in the City of North Attleboro and flows south through Luther Reservoir before entering Orrs Pond. It then flows south through the City of Attleboro (MA52-08), where it joins the Ten Mile River in Seekonk, Rhode Island, which continues to flow south through Rhode Island and ultimately discharges to the Narragansett Bay.

The Facility's discharge is upstream of two (Manchester Reservoir and Orr's Pond) of the three active drinking water sources of the Attleboro Water Division. The Attleboro Water Division supplies drinking water to over 40,000 people in Attleboro, North Attleboro and Mansfield. Water in the Luther Reservoir is pumped to Manchester Reservoir or to Orr's Pond and then used for the public water supply.

The 3.2 mile segment of the Sevenmile River (MA52-07) into which the Facility discharges has been categorized as Class A under the Commonwealth of Massachusetts Water Quality Standards. Class A waters are described in the Water Quality Standards (314 CMR 4.05(3)(a)) as "designated as a source of public water supply. To the extent compatible with this use they shall be an excellent habitat for fish, other aquatic life and wildlife, and suitable for primary and secondary contact recreation. These waters shall have excellent aesthetic value. These waters are designated for protection as Outstanding Water Resources (ORWs) under 314 CMR 4.04(3)." In addition, this segment is considered a warm water fishery.

This segment is listed on the *Final Massachusetts Year 2008 Integrated List of Waters* as a Category 2 waterbody: "Attaining some Uses; other Uses Not Assessed". According to the *Ten Mile River Watershed 2002 Water Quality Assessment Report*, this segment supports/attains the aquatic life, primary and secondary contact recreation, and aesthetic uses. Fish consumption was

not assessed.

5. Limitations and Conditions

The effluent limitations of the Draft Permit and the monitoring requirements may be found in the Draft Permit.

6. Permit Basis: Statutory and Regulatory Authority

6.1 General Requirements

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements including monitoring and reporting. The draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and applicable State regulations. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136.

When developing permit limits in this permit, EPA considered (a) technology-based requirements, (b) water quality-based requirements (c) all limitations and requirements in the current/existing permit, and (d) water supply protection.

6.2 Technology-Based Requirements

Subpart A of the 40 CFR §125 establishes criteria and standards for the imposition of technology-based treatment requirements in permits under Section 301(b) of the CWA, including the application of EPA promulgated effluent limitations and case-by-case determinations of effluent limitations under Section 402(a)(1) of the CWA.

Technology-based treatment requirements represent the minimum level of control that must be imposed under sections 301(b) and 402 of the CWA (See 40 CFR 125 Subpart A) to meet Best Practicable Control Technology Currently Available (BPT) for conventional pollutants and some metals, Best Conventional Control Technology (BCT) for conventional pollutants, and Best Available Technology Economically Achievable (BAT) for non-conventional and toxic pollutants. Technology guidelines (effluent limitations) for various industrial categories are found in 40 CFR 400-471, Subchapter N, Effluent Guidelines and Standards. The present discharge does not fall into any of the listed categories.

In the absence of published technology-based effluent guidelines, the permit writer is authorized under Section 402(a)(1)(B) of the CWA to establish effluent limitations in a case-by-case basis using Best Professional Judgment (BPJ).

6.3 Water Quality Requirements

Section 301(b)(1)(C) of the CWA requires that effluent limitations based on water quality

considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when technology-based limitations would interfere with the attainment or maintenance of water quality in the receiving water.

Under Section 301(b)(1)(C) of the CWA and EPA regulations, NPDES permits must contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve state or federal water quality standards.

Water quality standards consist of three parts: (1) beneficial designated uses for a water-body or a segment of a water-body; (2) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s); and (3) anti-degradation requirements to ensure that once a use is attained it will not be degraded. The Massachusetts Surface Water Quality Standards, found at 314 CMR 4.00, include these elements. The state will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained. These standards also include requirements for the regulation and control of toxic constituents and require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site specific criteria is established.

The Draft Permit must limit any pollutant or pollutant parameter (conventional, non-conventional, and toxic) that is or may be discharged at a level that causes or has the "reasonable potential" to cause or contribute to an excursion above any water quality standard (40 CFR §122.44(d)). An excursion occurs if the projected or actual in-stream concentration exceeds an applicable water quality criterion. In determining "reasonable potential", EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from the permit's re-issuance application, monthly discharge monitoring reports (DMRs), and State and Federal Water Quality Reports; (3) sensitivity of the indicator species used in toxicity testing; (4) known water quality impacts of processes on waste waters; and (5) where appropriate, dilution of the effluent in the receiving water.

6.4 *Anti-backsliding*

Anti-backsliding as defined in 40 CFR §122.44(l)(1) requires reissued permits to contain limitations as stringent or more stringent than those of the previous permit unless the circumstances allow application of one of the defined exceptions to this regulation. As explained above, anti-backsliding applies to limits contained in the existing permit and, therefore, these limits are continued in the Draft Permit. Anti-backsliding is not triggered in this Draft Permit.

6.5 *Anti-degradation*

The Commonwealth of Massachusetts' anti-degradation provisions found in 314 CMR 4.04

ensure that provisions in 40 CFR §131.12 are met. These provisions ensure that all existing uses in the receiving water, along with the level of water quality necessary to protect those existing uses, are maintained and protected. The effluent limits in the Draft Permit should ensure that provisions in 314 CMR 4.04 are met. The State is also asked to certify that the anti-degradation provisions in State law are met.

7. Explanation of the Permit's Effluent Limitation(s)

7.1 Facility Information

The facility site is located directly to the southwest of the intersection of Route 1 and Route I-295. It is bounded by I-295 directly to the north, by Route 1 on the east, and by Allen Avenue to the west and southwest. According to the original fact sheet, "the site is comprised of 58 acres and is zoned for commercial use. The mall contains 4,350 parking spaces and approximately 960,000 square feet of retail space." The parking consists of both multi-level deck and ground level parking. Approximately 17 acres of impervious surface drains to Outfall 001, and 17 acres of impervious surfaces drains to Outfall 002.

Site stormwater is collected from two separate drainage areas, as shown on the *Emerald Square Drainage Maintenance Plan* in Attachment B. The upper portion of the site, which includes the upper parking areas, the upper off-site areas and the Mall's major roof areas, drains to an upper detention basin. The overflow from the basin travels through a series of three manmade wetland cells. The final cell dumps into a 12" diameter pipe which drains under Allen Avenue and leads to an old 24" x 30" stone culvert. The culvert passes under Route 1 and discharges into a small unnamed pond at the Whispering Pines Mobile Home Park. The overflow from the pond flows into an unnamed wetland and eventually into the Sevenmile River (Outfall 001). The inlet into the Whispering Pines unnamed pond is designated Outfall 001.

The second area drains the stormwater from drainage area 2 into the lower detention basin. The overflow from this basin travels through a pair of 30" concrete culverts under Route 1. The flow continues to a wetland channel about 400 feet in length, through a series of three manmade wetland cells, discharges (Outfall 002) to an unnamed wetland and on to the Sevenmile River. The outlet of wetland basin cell #3 is designated Outfall 002.

7.2 Permitted Outfalls

There are two outfalls from which the facility discharges. Outfall Serial Number 001 is located within the upper detention basin and wetland cells, at the outlet of wetland cell #3, prior to entering the 24" drainage pipe running under the Whispering Pines Mobile Home Park. Outfall Serial Number 002 is located at the outlet of wetland cell #3 of the lower wetland cells, prior to entering off-site existing wetlands. Attachment B shows these locations on the *Emerald Square Drainage Maintenance Plan*.

7.3 *Derivation of Effluent Limits under the Federal CWA and the Commonwealth of Massachusetts' Water Quality Standards*

The effluent limits and permit requirements included in the Draft Permit are discussed in greater detail below.

7.3.1 Flow

The Draft Permit requires flow to be reported as an estimate of the volume of runoff discharging from each wetlands cell in million gallons per day (MGD). The Draft Permit also requires that the date and duration of the storm event and the time elapsed in hours since the last measurable storm greater than 0.10 inches be documented and reported to EPA and MassDEP.

EPA is not proposing any change to this requirement in this round of permitting.

7.3.2 pH - range of 6.5 - 8.3 S.U. but not more than 0.5 units outside the background range

The Massachusetts Surface Water Quality Standards require that pH in a Class A water “shall be in the range of 6.5 through 8.3 standard units but not more than 0.5 units outside of the natural background range” (314 CMR 4.05(3)(a)3).

To address the Standards, the 2004 permit added the following requirement: “the pH of the effluent shall not be less than 6.5 SU, nor greater than 8.3 SU at any time, unless these values are exceeded due to natural causes. The pH shall be no more than 0.5 units outside the natural background range. To demonstrate that pH values of the effluent are outside the permitted pH range due to natural causes, the permittee must show that pH measurements of the source water and the effluent are the same. When the values are exceeded due to natural causes, documentation of such conditions must be submitted by the permittee with the quarterly DMR and recorded in the SWPPP.”

In order to continue to address the Standards and to comply with antibacksliding provisions (40 CFR §122.44(l)(1)), EPA is not proposing any change to this limit in this round of permitting.

7.3.3 Oil & Grease - Permit Effluent Limit - 5 mg/l

In the original permit, EPA recommended a maximum daily effluent limitation of 5 mg/l be established for Oil & Grease. As stated in the original fact sheet, “an effluent limitation of 5 mg/l is technologically feasible given the fact that oil and grease traps will be installed in the drainage system, along with the additional detention time provided by the sedimentation and artificial wetland basins. In addition, a limit of 5 mg/l would provide additional protection for the water supply resource from other contaminants that could be found in petroleum-based oil and grease.” All reissuances of the permit have continued this effluent limitation.

As presented in Attachment C, monitoring data from the past five years show the concentration of oil and grease does not approach the effluent limitation of 5 mg/l; the

maximum reported concentration since October 1994 has been 1 mg/l for both Outfalls 001 and 002.

In order to comply with antibacksliding provisions, EPA is not proposing any change to this limit in this round of permitting.

7.3.4 Total Suspended Solids (TSS) - Permit Effluent Limit - 30 mg/l

The original permit established a daily maximum effluent limitation of 20 mg/l for Total Suspended Solids (TSS). This was derived using Best Professional Judgment as to what is technologically feasible with this treatment system.

However, in response to public comments on the original Draft Permit, EPA revised the TSS effluent limitation from 20 mg/l to 30 mg/l. This effluent limitation of 30 mg/l was based on the water quality impact analysis of the Draft Environmental Impact Report (DEIR), which assumed a TSS concentration of 235 mg/l entering the treatment system and an 87% removal rate, resulting in a TSS concentration of approximately 30 mg/l in the effluent. In addition, assuming a removal efficiency of 95%, rather than 87%, and assuming the worst case scenario presented in the water quality impact analysis of the DEIR (619 mg/l of TSS entering the on-site treatment system), the projected maximum TSS concentration in the effluent would be 31 mg/l. As a result, EPA decided the TSS effluent limitation of 30 mg/l should be reasonable and achievable from a treatment standpoint and would be protective of water supply and water quality. All reissuances of the permit have continued this effluent limitation. Monitoring data from the past five years, presented in Attachment C, show there has been one exceedance of the TSS limit of 30 mg/l at Outfall 002, in September 2007 (39 mg/l). The September 2007 monitoring occurred during wet weather that lasted approximately 3 days, with a total precipitation of 1.02 inches and an antecedent dry period of 5 days. Excluding this outlier, TSS concentrations have averaged around 2 mg/l at Outfalls 001 and 002.

In order to comply with antibacksliding provisions, EPA is not proposing any change to this limit in this round of permitting.

7.3.5 Copper - Permit Effluent Limit - 7.5 µg/l

The original permit established a maximum daily effluent limitation of 45 µg/l for copper. This limit was based on the acute ambient water quality criteria for copper (18 µg/l) and use of a dilution factor of 2.4 (calculated by dividing the total area draining into the wetlands (85.6 acres) by the total impervious area related to the project (35.1 acres)), ($18 \times 2.4 = 43.4 \mu\text{g/l}$). The acute criteria was used because it was more applicable to the type of flow coming from intermittent stormwater flow.

Since the issuance of the initial permit, EPA revised the acute ambient water quality criteria for copper from 18 µg/l to 13 µg/l. (EPA's National Recommended Water Quality Criteria: 2002, EPA 822-R-02-047, November 2002). Using the new criteria for the copper effluent limit calculation and the original dilution factor of 2.4, the maximum daily effluent limitation would be 31.2 µg/l ($13 \mu\text{g/l} \times 2.4 = 31.2 \mu\text{g/l}$).

However, as explained in the 2004 permit Fact Sheet, “this does not account for the hardness factor of the receiving stream. The concentration of available copper is dependent on the hardness of the water in which it is contained. EPA’s Health and Ecological Criteria Division affirms that the concentration of the hardness downstream of the permittee’s discharge is to be used in the calculation of permit limits for hardness dependent metals. In the absence of any data providing a hardness number for the receiving stream water, EPA will use the hardness of the effluent for this calculation.”

EPA utilized the hardness of the control water used for the WET tests performed by New England Bioassay, Inc. for the permittee in 1994 (50 mg/l as CaCO₃) and 1996 (52 mg/l as CaCO₃). This assumes that proper protocol was used by the lab, which requires that if an alternate standard dilution water is used in place of receiving water for chronic toxicity testing it shall have hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving stream. The 2004 permit used the more conservative hardness number of 50 mg/l for the derivation of an effluent limit for copper.

Using this hardness number, and the dilution factor of 2.4, the 2004 permit fact sheet presented calculations that resulted in an acute (Maximum Daily) water quality based limitation for total recoverable copper of 17.5 µg/l and a chronic (Monthly Average) limit of 12.4 µg/l. The 2004 permit set a maximum daily effluent limit of 17.5 µg/l for total copper. As previously stated, acute criteria is more applicable to the type of flow coming from intermittent stormwater flow.

In reviewing the permit application and developing this Draft Permit, EPA became aware that the previous dilution factor of 2.4 is not appropriate for this receiving water. State Water Quality Standards establish the hydrologic condition at which water quality criteria must be applied. For rivers and streams the hydrologic condition is the lowest observed mean river flow for seven consecutive days recorded over a 10-year recurrence interval (7Q10) (314 CMR § 4.03(3)). Water quality-based effluent limits are then based on a dilution factor calculated using the permitted flow of the facility and the low flow condition in the receiving water. For the discharge to the wetland, a dilution factor of one was assumed based on the inconsequential river flow through the wetland during critical summer period. Therefore, the following sections present the recalculation of the new total copper effluent limit, using the hardness of 50 mg/l and the dilution factor of one.

The numeric water quality criteria for acute toxicity (criterion maximum concentration, or CMC) and chronic toxicity (criterion continuous concentration, or CCC) to aquatic life are part of the water quality standards and based on the dissolved fraction of metals. The CMC and CCC depend on ambient hardness concentrations expressed by the following equation found in *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit From A Dissolved Criterion* (EPA-823-B-96-007):

Given: $WQC_{Metal} = \exp [a \cdot \ln(H) + b] \cdot CF$

Where: a = metal specific constant for calculating freshwater dissolved metals criteria that are hardness-dependent
b = metal specific constant for calculating freshwater dissolved

		metals criteria that are hardness-dependent
ln	=	natural logarithm
H	=	water column hardness (mg/l)
CF	=	pollutant specific Conversion Factor for converting a metal criterion expressed as a total recoverable fraction in the water column to a criterion expressed as the dissolved fraction on the water column

The following constants for copper, found in the National Recommended Water Quality Criteria, are used to calculate total recoverable numeric water quality criteria, which in turn, are converted using the conversion factor to calculate dissolved numeric water quality criteria:

Chemical	CMC		CCC		Freshwater Conversion Factors (CF)	
	a	b	a	b	CMC	CCC
Copper	0.9422	-1.7	0.8545	-1.702	0.960	0.960

Whereas numeric water quality criteria for acute toxicity (criterion maximum concentration, or CMC) and chronic toxicity (criterion continuous concentration, or CCC) to aquatic life are based on the dissolved fraction of metals, 40 CFR §122.45(c) requires that permit limits are based on total recoverable metals and not dissolved metals.

Therefore, the first step to determine effluent limits for metals is to calculate the total recoverable concentrations using the hardness and the metal-specific constants (a and b). Then, using the metal-specific conversion factor (CF), the next step is to convert concentrations based on total recoverable metals to concentrations based on dissolved metals.

Consequently, it is necessary to apply a translator in order to develop a total recoverable permit limit from dissolved criteria. The translator reflects how a discharge partitions between the particulate and dissolved phases after mixing with the receiving water. In the absence of site specific data on how a particular discharge partitions in the receiving water, a default assumption that the translator is equivalent to the criteria conversion factor is used in accordance with the Metals Translator Guidance.

The calculations to determine the maximum allowable copper acute and chronic discharge concentrations are as follows:

Acute:

$$\begin{aligned} \text{CMC}_{\text{total recoverable}} &= \exp[a \cdot \ln(\text{hardness}) + b] \\ &= \exp[0.9422 \cdot \ln(50.0 \text{ mg/l}) - 1.7] &= 7.286 \text{ ug/L} \end{aligned}$$

$$\begin{aligned} \text{CMC}_{\text{dissolved}} &= (\text{CMC}_{\text{total recoverable}}) \cdot (\text{CF}) \\ &= (7.286 \text{ ug/L}) \cdot (0.960) &= 6.994 \text{ ug/L} \end{aligned}$$

$$\begin{aligned} \text{CMC effluent limit} &= (\text{CMC}_{\text{dissolved}} \cdot \text{Dilution Factor}) / \text{Translator} \\ &= (\text{CMC}_{\text{dissolved}} \cdot \text{Dilution Factor}) / \text{CF} \\ &= (6.994 \text{ ug/L} \cdot 1.0) / (0.960) &= 7.3 \text{ ug/L} \end{aligned}$$

Chronic:

$$\begin{aligned} \text{CCC}_{\text{total recoverable}} &= \exp[a \cdot \ln(\text{hardness}) + b] \\ &= \exp[0.8545 \cdot \ln(50.0 \text{ mg/l}) - 1.702] &= 5.159 \text{ ug/L} \end{aligned}$$

$$\begin{aligned} \text{CCC}_{\text{dissolved}} &= (\text{CMC}_{\text{total recoverable}}) \cdot (\text{CF}) \\ &= (5.159 \text{ ug/L}) \cdot (0.960) &= 4.953 \text{ ug/L} \end{aligned}$$

$$\begin{aligned} \text{CCC effluent limit} &= (\text{CCC}_{\text{dissolved}} \cdot \text{Dilution Factor})/\text{Translator} \\ &= (\text{CCC}_{\text{dissolved}} \cdot \text{Dilution Factor})/\text{CF} \\ &= (4.953 \text{ ug/L} \cdot 1)/(0.960) &= 5.2 \text{ ug/L} \end{aligned}$$

Therefore, the acute (Maximum Daily) water quality based limitation for total copper is 7.3 µg/l and the chronic (Monthly Average) limit is 5.2 µg/l.

Based on these calculations and to be protective of public water supply and meet water quality standards, the Draft Permit includes a new maximum daily limit of 7.5 µg/l for total copper. As previously stated, the acute criteria is used because it is more applicable to the type of flow coming from intermittent stormwater events.

As shown in Attachment C, monitoring data from the past five years show the concentration of total copper has ranged from 0 µg/L to 6.4 mg/l, averaging around 1.7 µg/L at both Outfalls 001 and 002.

7.3.6 Lead - Permit Effluent Limit - 20 µg/l

The original Draft Permit recommended a maximum daily effluent limitation of 12 µg/l for lead. This was based on the maximum contaminant level for lead leaving the water treatment facility, which was 5 µg/l, and the dilution factor of 2.4 (5 µg/l x 2.4 = 12 µg/l). Following public comment, the lead limit was changed to 20 µg/l based on the estimated maximum lead concentration entering the treatment system and the removal efficiency of the treatment system.

Since the issuance of the initial permit, EPA has revised the acute ambient water quality criteria for lead from 82 µg/l to 65 µg/l (EPA's National Recommended Water Quality Criteria: 2002, EPA-822-R-02-047, November 2002). Using the new criteria for the lead effluent limit calculation and the original dilution factor of 2.4, the maximum daily effluent limitation would be 156 µg/l (65 µg/l x 2.4 = 156 µg/l).

However, as explained in the 2004 permit Fact Sheet, "this does not account for the hardness factor of the receiving stream. The concentration of available lead is dependent on the hardness of the water in which it is contained. EPA's Health and Ecological Criteria Division affirms that the concentration of the hardness downstream of the permittee's discharge is to be used in the calculation of permit limits for hardness dependent metals. In the absence of any data providing a hardness number for the receiving stream water, EPA will use the hardness of the effluent for this calculation."

EPA utilized the hardness of the control water used for the WET tests performed by New England Bioassay, Inc. for the permittee in 1994 (50 mg/l as CaCO₃) and 1996 (52 mg/l as CaCO₃). This assumes that proper protocol was used by the lab, which requires that if an alternate standard dilution water is used in place of receiving water for chronic toxicity testing it shall have hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving stream. The 2004 permit used the more conservative hardness number of 50 mg/l for the derivation of an effluent limit for lead.

Using this hardness number, and the dilution factor of 2.4, the 2004 permit fact sheet presented calculations that resulted in an acute (Maximum Daily) water quality based limitation for total lead of 81.1 µg/l and a chronic (Monthly Average) limit of 3.2 µg/l. Despite these calculations, in order to be protective of the public water supply and comply with anti-backsliding, the 2004 permit continued the maximum daily effluent limit of 20 ug/L.

In reviewing the permit application and developing this Draft Permit, EPA became aware that the previous dilution factor of 2.4 is not appropriate for this receiving water. State Water Quality Standards establish the hydrologic condition at which water quality criteria must be applied. For rivers and streams the hydrologic condition is the lowest observed mean river flow for seven consecutive days recorded over a 10-year recurrence interval (7Q10) (314 CMR § 4.03(3)). Water quality-based effluent limits are then based on a dilution factor calculated using the permitted flow of the facility and the low flow condition in the receiving water. For the discharge to the wetland, a dilution factor of one was assumed based on the inconsequential river flow through the wetland during critical summer period. Therefore, the following sections present the recalculation of the total lead effluent limit, using the hardness of 50 mg/l and the dilution factor of one.

The numeric water quality criteria for acute toxicity (criterion maximum concentration, or CMC) and chronic toxicity (criterion continuous concentration, or CCC) to aquatic life are part of the water quality standards and based on the dissolved fraction of metals. The CMC and CCC depend on ambient hardness concentrations expressed by the following equation found in *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit From A Dissolved Criterion* (EPA-823-B-96-007):

Given:
$$WQC_{\text{Metal}} = \exp [a \cdot \ln(H) + b] \cdot CF$$

Where:

a	=	metal specific constant for calculating freshwater dissolved metals criteria that are hardness-dependent
b	=	metal specific constant for calculating freshwater dissolved metals criteria that are hardness-dependent
ln	=	natural logarithm
H	=	water column hardness (mg/l)
CF	=	pollutant specific Conversion Factor for converting a metal criterion expressed as a total recoverable fraction in the water column to a criterion expressed as the dissolved fraction on the water column

The following constants for lead, found in the National Recommended Water Quality Criteria,

are used to calculate total recoverable numeric water quality criteria, which in turn, are converted using the conversion factor to calculate dissolved numeric water quality criteria:

Chemical	CMC		CCC		Freshwater Conversion Factors (CF)	
	a	b	a	b	CMC	CCC
Lead	1.273	-1.46	1.273	-4.705	0.892 *	0.892 *

* For lead, the conversion factor is based on hardness. Therefore, $CF = 1.46203 - (\ln(\text{hardness}) \cdot 0.145712)$.

Whereas numeric water quality criteria for acute toxicity (criterion maximum concentration, or CMC) and chronic toxicity (criterion continuous concentration, or CCC) to aquatic life are based on the dissolved fraction of metals, 40 CFR §122.45(c) requires that permit limits are based on total recoverable metals and not dissolved metals.

Therefore, the first step to determine effluent limits for metals is to calculate the total recoverable concentrations using the hardness and the metal-specific constants (a and b). Then, using the metal-specific conversion factor (CF), the next step is to convert concentrations based on total recoverable metals to concentrations based on dissolved metals.

Consequently, it is necessary to apply a translator in order to develop a total recoverable permit limit from dissolved criteria. The translator reflects how a discharge partitions between the particulate and dissolved phases after mixing with the receiving water. In the absence of site specific data on how a particular discharge partitions in the receiving water, a default assumption that the translator is equivalent to the criteria conversion factor is used in accordance with the Metals Translator Guidance.

The calculations to determine the maximum allowable lead acute and chronic discharge concentrations are as follows:

Acute:

$$\begin{aligned} \text{CMC}_{\text{total recoverable}} &= \exp[a \cdot \ln(\text{hardness}) + b] \\ &= \exp[1.273 \cdot \ln(50.0 \text{ mg/l}) - 1.46] = 33.785 \text{ ug/L} \end{aligned}$$

$$\begin{aligned} \text{CMC}_{\text{dissolved}} &= (\text{CMC}_{\text{total recoverable}}) \cdot (\text{CF}) \\ &= (33.785 \text{ ug/L}) \cdot (0.892) = 30.136 \text{ ug/L} \end{aligned}$$

$$\begin{aligned} \text{CMC effluent limit} &= (\text{CMC}_{\text{dissolved}} \cdot \text{Dilution Factor}) / \text{Translator} \\ &= (\text{CMC}_{\text{dissolved}} \cdot \text{Dilution Factor}) / \text{CF} \\ &= (30.136 \text{ ug/L} \cdot 1.0) / (0.892) = 33.8 \text{ ug/L} \end{aligned}$$

Chronic:

$$\begin{aligned} \text{CCC}_{\text{total recoverable}} &= \exp[a \cdot \ln(\text{hardness}) + b] \\ &= \exp[1.273 \cdot \ln(50.0 \text{ mg/l}) - 4.705] = 1.317 \text{ ug/L} \end{aligned}$$

$$\text{CCC}_{\text{dissolved}} = (\text{CMC}_{\text{total recoverable}}) \cdot (\text{CF})$$

$$= (1.317 \text{ ug/L}) \cdot (0.892) = 1.174 \text{ ug/L}$$

$$\begin{aligned} \text{CCC effluent limit} &= (\text{CCC}_{\text{dissolved}} \cdot \text{Dilution Factor})/\text{Translator} \\ &= (\text{CCC}_{\text{dissolved}} \cdot \text{Dilution Factor})/\text{CF} \\ &= (1.174 \text{ ug/L} \cdot 1)/(0.892) = 1.3 \text{ ug/L} \end{aligned}$$

Therefore, the acute (Maximum Daily) water quality based limitation for total lead is 33.8 µg/l and the chronic (Monthly Average) limit is 1.3 µg/l.

In this case, the effluent limit for lead of 20 µg/L in the previous permit was more restrictive.

This limit was based on the treatment system removal efficiencies in a worst case scenario, is more protective of a drinking water supply, and based on recent sampling results, technologically feasible. The requirement for anti-backsliding also prevents EPA from using the larger number as a limit. Therefore, EPA proposes to continue the previous permit effluent limit of 20 µg/L for total lead.

As shown in Attachment C, monitoring data from the past five years show the concentration of total lead does not approach the effluent limitation of 20 µg/L; the concentration has ranged from 0 µg/L to 11.8 µg/L, averaging around 1.3 µg/L at both Outfalls 001 and 002.

7.3.7 Zinc - Permit Effluent Limit - 65 µg/l

In the original Draft Permit, EPA established a daily maximum effluent limitation of 144 µg/l for zinc based on the proposed Commonwealth of Massachusetts in-stream water quality regulations. The proposed chronic water quality standard for zinc was 30 µg/l. The acute value was obtained by doubling the proposed chronic number, resulting in a value of 60 µg/l. Based on a dilution factor of 2.4, the derived value necessary to protect water quality based on proposed state regulations would be 144 µg/l.

In EPA's response to comments, the effluent limitation for zinc was changed from 144 µg/l to 130 µg/l based on water quality criteria considerations. EPA's acute water quality criteria for zinc is 120 µg/l, based on a hardness of 100 mg/l. At the time, available data indicated that the hardness in the Sevenmile River vicinity was approximately 40 mg/l. To remain consistent in the hardness calculations for copper and lead, the 2004 fact sheet presented calculations for zinc using the hardness number of 50 mg/l.

Using a hardness of 50 mg/l, and the dilution factor of 2.4, the 2004 permit fact sheet presented calculations that resulted in an acute (Maximum Daily) water quality based limitation for total zinc of 159.8 µg/l and a chronic (Monthly Average) limit of 159.9 µg/l. However, during development of the 2004 permit, review of the effluent monitoring data from 2002 through 2003 indicated a higher level of treatment attainable by the existing on-site treatment system. The highest reported level of zinc during that period was 56 µg/l. Therefore using these results and Best Professional Judgment, EPA decided to lower the effluent limit for zinc to 65 µg/l for the 2004 permit. This level is more protective of a drinking water supply and based on recent sampling results, technologically feasible.

In reviewing the permit application and developing this Draft Permit, EPA became aware that the previous dilution factor of 2.4 is not appropriate for this receiving water. State Water Quality Standards establish the hydrologic condition at which water quality criteria must be applied. For rivers and streams the hydrologic condition is the lowest observed mean river flow for seven consecutive days recorded over a 10-year recurrence interval (7Q10) (314 CMR § 4.03(3)). Water quality-based effluent limits are then based on a dilution factor calculated using the permitted flow of the facility and the low flow condition in the receiving water. For the discharge to the wetland, a dilution factor of one was assumed based on the inconsequential river flow through the wetland during critical summer period. Therefore, this fact sheet presents the recalculation of the total zinc effluent limit, using the hardness of 50 mg/l and the dilution factor of one.

The numeric water quality criteria for acute toxicity (criterion maximum concentration, or CMC) and chronic toxicity (criterion continuous concentration, or CCC) to aquatic life are part of the water quality standards and based on the dissolved fraction of metals. The CMC and CCC depend on ambient hardness concentrations expressed by the following equation found in *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit From A Dissolved Criterion* (EPA-823-B-96-007):

Given: $WQC_{Metal} = \exp [a \cdot \ln(H) + b] \cdot CF$

- Where: a = metal specific constant for calculating freshwater dissolved metals criteria that are hardness-dependent
- b = metal specific constant for calculating freshwater dissolved metals criteria that are hardness-dependent
- ln = natural logarithm
- H = water column hardness (mg/l)
- CF = pollutant specific Conversion Factor for converting a metal criterion expressed as a total recoverable fraction in the water column to a criterion expressed as the dissolved fraction on the water column

The following constants for zinc, found in the National Recommended Water Quality Criteria, are used to calculate total recoverable numeric water quality criteria, which in turn, are converted using the conversion factor to calculate dissolved numeric water quality criteria:

Chemical	CMC		CCC		Freshwater Conversion Factors (CF)	
	a	b	a	b	CMC	CCC
Zinc	0.8473	0.884	0.8473	0.884	0.978	0.986

Whereas numeric water quality criteria for acute toxicity (criterion maximum concentration, or CMC) and chronic toxicity (criterion continuous concentration, or CCC) to aquatic life are based on the dissolved fraction of metals, 40 CFR §122.45(c) requires that permit limits are based on total recoverable metals and not dissolved metals.

Therefore, the first step to determine effluent limits for metals is to calculate the total

recoverable concentrations using the hardness and the metal-specific constants (a and b). Then, using the metal-specific conversion factor (CF), the next step is to convert concentrations based on total recoverable metals to concentrations based on dissolved metals.

Consequently, it is necessary to apply a translator in order to develop a total recoverable permit limit from dissolved criteria. The translator reflects how a discharge partitions between the particulate and dissolved phases after mixing with the receiving water. In the absence of site specific data on how a particular discharge partitions in the receiving water, a default assumption that the translator is equivalent to the criteria conversion factor is used in accordance with the Metals Translator Guidance.

The calculations to determine the maximum allowable zinc acute and chronic discharge concentrations are as follows:

Acute:

$$\begin{aligned} \text{CMC}_{\text{total recoverable}} &= \exp[a \cdot \ln(\text{hardness}) + b] \\ &= \exp[0.8473 \cdot \ln(50.0 \text{ mg/l}) + 0.884] &= 66.597 \text{ ug/L} \end{aligned}$$

$$\begin{aligned} \text{CMC}_{\text{dissolved}} &= (\text{CMC}_{\text{total recoverable}}) \cdot (\text{CF}) \\ &= (66.597 \text{ ug/L}) \cdot (0.978) &= 65.135 \text{ ug/L} \end{aligned}$$

$$\begin{aligned} \text{CMC effluent limit} &= (\text{CMC}_{\text{dissolved}} \cdot \text{Dilution Factor})/\text{Translator} \\ &= (\text{CMC}_{\text{dissolved}} \cdot \text{Dilution Factor})/\text{CF} \\ &= (65.135 \text{ ug/L} \cdot 1.0)/(0.978) &= 66.6 \text{ ug/L} \end{aligned}$$

Chronic:

$$\begin{aligned} \text{CCC}_{\text{total recoverable}} &= \exp[a \cdot \ln(\text{hardness}) + b] \\ &= \exp[0.8473 \cdot \ln(50.0 \text{ mg/l}) + 0.884] &= 66.597 \text{ ug/L} \end{aligned}$$

$$\begin{aligned} \text{CCC}_{\text{dissolved}} &= (\text{CMC}_{\text{total recoverable}}) \cdot (\text{CF}) \\ &= (66.597 \text{ ug/L}) \cdot (0.986) &= 65.664 \text{ ug/L} \end{aligned}$$

$$\begin{aligned} \text{CCC effluent limit} &= (\text{CCC}_{\text{dissolved}} \cdot \text{Dilution Factor})/\text{Translator} \\ &= (\text{CCC}_{\text{dissolved}} \cdot \text{Dilution Factor})/\text{CF} \\ &= (65.664 \text{ ug/L} \cdot 1)/(0.986) &= 66.6 \text{ ug/L} \end{aligned}$$

Therefore, the acute (Maximum Daily) water quality based limitation for total zinc is 66.6 µg/l and the chronic (Monthly Average) limit is 66.6 µg/l.

In this case, the effluent limit for zinc of 65 ug/L in the previous permit was more restrictive.

This limit was based review of effluent monitoring data, Best Professional Judgment, is more protective of a drinking water supply, and based on recent sampling results, technologically feasible. The requirement for anti-backsliding also prevents EPA from using the larger number as a limit. Therefore, EPA proposes to continue the previous permit effluent limit of 65 ug/L for total zinc.

As shown in Attachment C, monitoring data from the past five years show the concentration of total zinc does not approach the effluent limitation of 65 µg/L; the concentration has ranged from 0 µg/L to 39.5 µg/L, averaging approximately 4 µg/L at Outfalls 001 and 9 µg/L at Outfall 002.

8. Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)), EPA is required to consult with the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) if EPA's action or proposed actions that it funds, permits, or undertakes, may adversely impact any essential fish habitat (EFH). The Amendments broadly define EFH as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. § 1802 (10). Adversely impact means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. § 600.910 (a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat wide impacts, including individual, cumulative, or synergistic consequences of actions.

EFH is only designated for species for which federal Fisheries Management Plans exist (16 U.S.C. § 1855(b)(1)(A)). A NOAA Fisheries website (<http://www.nero.noaa.gov/hcd/>) contains text descriptions and maps of designated EFH. In some cases, the narrative identifies rivers and other waterways that should be considered EFH due to present or historic use by federally managed species such as Atlantic salmon.

EPA's review of available EFH information indicates that the Sevenmile River is not designated EFH for any federally managed species and therefore there is no adverse impact on EFH. As such, EFH consultation with NOAA Fisheries is not required.

9. Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) grants authority to and imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants ("listed species") and habitat of such species that has been designated as critical (a "critical habitat"). The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species. The National Marine Fisheries Service (NOAA Fisheries) administers Section 7 consultations for marine species and anadromous fish.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, and plants to see if any such listed species might potentially be impacted by the reissuance of this NPDES permit and has not found any such listed species. According to the Massachusetts Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program list of rare species by Town

(http://www.mass.gov/dfwele/dfw/nhosp/species_info/town_lists/town_n.htm#northattleborough), there are no federally listed endangered or threatened species in the vicinity of the discharge.

EPA has determined that there are no species of concern present in the vicinity of the outfalls from this Facility. Therefore, EPA does not need to formally consult with USFWS or NOAA Fisheries in regard to the provisions of the ESA.

EPA has structured the proposed limits to be sufficiently stringent to assure that Water Quality Standards will be met. The effluent limits established in this permit ensure the protection of aquatic life and maintenance of the receiving water as an aquatic habitat. During the public comment period, EPA has provided a copy of the Draft Permit and Fact Sheet to both NOAA Fisheries and USFWS.

10. Stormwater Pollution Prevention Plan (SWPPP)

This facility's discharge is mainly a result of stormwater runoff from parking lots and paved surfaces. In addition, the mall utilizes two (2) electrical transformers that contain mineral oil as dielectric fluid (463 gallons and 107 gallons, respectively), which is contained in a sealed tank within each transformer. Sears Automotive Center also off-loads oil from two 500 gallon underground storage tanks. There is a 1,000 gallon diesel storage tank for the emergency generator, located in a concrete room. The handling and storage of these materials could result in the discharge of pollutants to waters of the United States either directly or indirectly through stormwater runoff.

Under the initial permit, the facility was required to develop and submit a Best Management Practices Plan, and under subsequent permits, the facility was required to review, update, and implement the Best Management Practices Plan (BMPP). Since the issuance of the November 2004 permit, the Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP) has been re-issued, which includes more detailed requirements related to stormwater pollution prevention.

To achieve consistency with the MSGP, and to control the activities/operations which could contribute pollutants to waters of the United States, potentially violating the State's Water Quality Standards, the Draft Permit requires the facility to develop, implement, and maintain a Stormwater Pollution Prevention Plan (SWPPP) documenting the application of best management practices (BMPs) appropriate for this specific facility (See Sections 304(e) and 402(a)(1) of the CWA and 40 CFR §122.44(k)).

The goal of the SWPPP is to reduce, or prevent, the discharge of pollutants through the stormwater system. The SWPPP serves to document the selection of, and if necessary, design and installation of, control measures, including BMPs. Additionally, the SWPPP requirements in the Draft Permit are intended to facilitate a systematic approach for the permittee to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit.

The SWPPP shall be prepared in accordance with good engineering practices and identify potential sources of pollutants, which may reasonably be expected to affect the quality of stormwater discharges associated with industrial activity from the facility. The SWPPP documents the appropriate BMPs implemented or to be implemented at the facility to satisfy the non-numeric technology-based effluent limitations included in the Draft Permit. These non-numeric effluent limitations support, and are equally enforceable as, the numeric effluent limitations included in the Draft Permit. Because this facility's discharge is mainly stormwater runoff from a parking lot, sweeping, catch basin cleaning and spill prevention sections of the SWPPP are particularly important and should be closely followed.

SWPPP development and implementation generally involves the following four main steps:

1. Forming a team of qualified facility personnel who will be responsible for developing and updating the SWPPP and assisting the plant manager in its implementation;
2. Assessing the potential stormwater pollution sources;
3. Selecting and implementing appropriate management practices and controls for these potential pollution sources; and
4. Reevaluating, periodically, the effectiveness of the SWPPP in preventing stormwater contamination and in complying with the various terms and conditions of the Draft Permit.

11. Monitoring

The effluent monitoring requirements have been established to yield data representative of the discharge under authority of Section 308 (a) of the CWA in accordance with 40 CFR §§122.41 (j), 122.44 (l), and 122.48.

12. State Certification Requirements

Under CWA Section 401(a)(1), EPA may not issue a permit unless the MassDEP either certifies that the effluent limitations contained in this permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards or waives its right to such a certification. EPA has requested that MassDEP certify the permit. EPA expects that the permit will be certified. Regulations governing state certification are set forth in 40 CFR § 124.53 and 124.55.

13. Comment Period, Hearing Requests, and Procedures for Final Decisions

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to **Janet Moonan, U.S. Environmental Protection Agency, Region 1 (New England), 5 Post Office Square - Suite 100, Mail Code OEP06-1, Boston, MA 02109-3912**. Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 CFR § 124.12 are satisfied. In reaching a

final decision on the Draft Permit, the EPA will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after any public hearings, if such hearings are held, the EPA will issue a Final Permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the Final Permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 CFR § 124.19.

14. EPA and MassDEP Contact

Additional information concerning the Draft Permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

Janet Moonan
U.S. Environmental Protection Agency
Region 1 (New England)
5 Post Office Square, Suite 100
Mail Code OEP06-1
Boston, MA 02109-3912
Telephone: (617) 918-1319
Email: moonan.janet@epa.gov

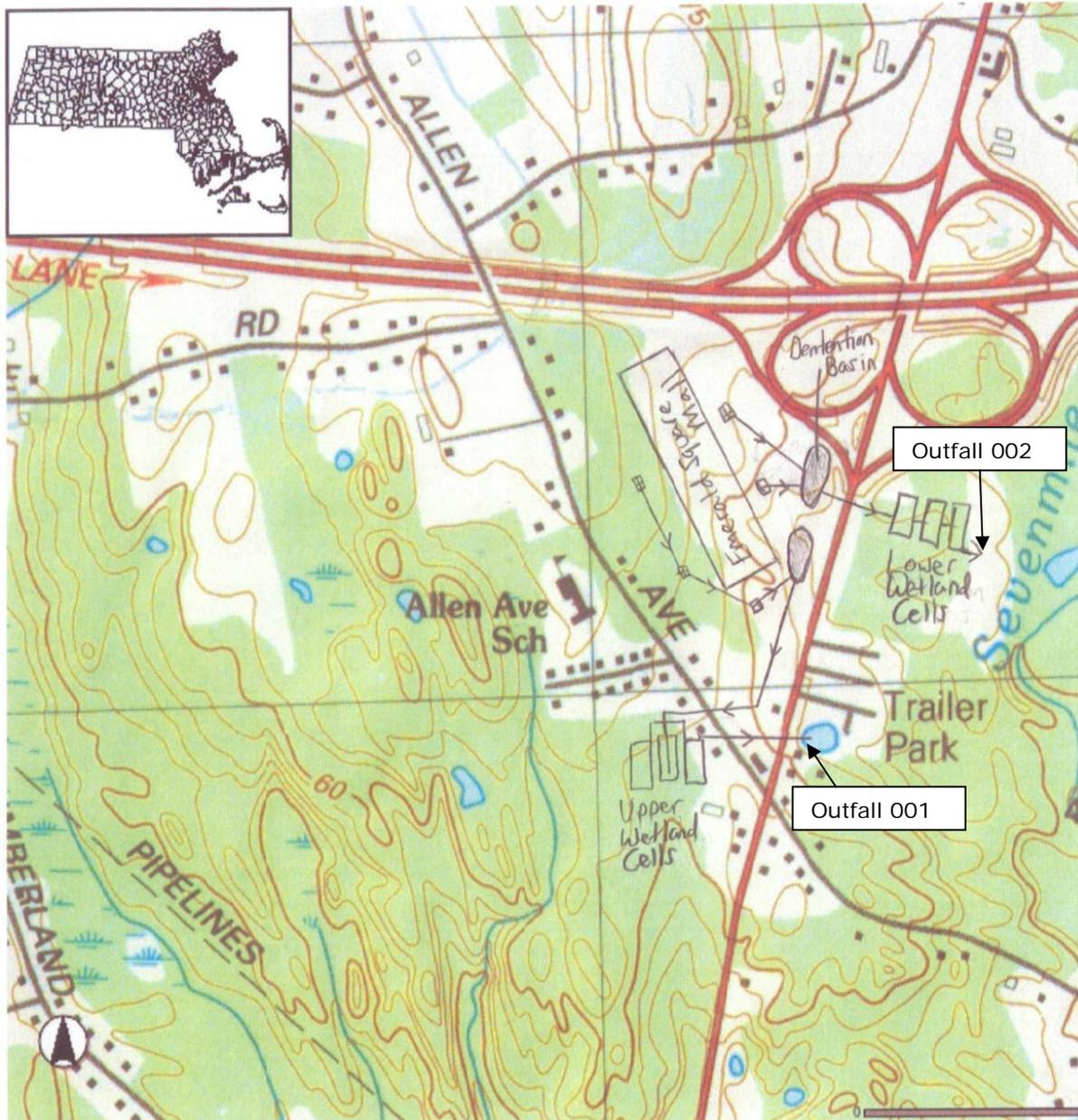
Kathleen Keohane
Massachusetts Department of Environmental
Protection
Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608
Telephone: (508) 767-2856
Email: kathleen.keohane@state.ma.us

Date

Stephen S. Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

Attachment A – Figures (cont.)

Figure 2: Facility and Discharge Locations



*Attachment C - DMR Data Summary, October 1, 2004 through June 30, 2009***Outfall 001**

	Copper, total (as Cu)	Flow	Lead, total (as Pb)	Oil & Grease	pH		Solids, total suspended	Zinc, total (as Zn)
					Minimum	Maximum		
Limit	17.5	Report	20	5	6.5	8.3	30	65
unit	ug/L	Mgal/d	ug/L	mg/L	SU	SU	mg/L	65
DMR Date	Daily Max	Daily Max	Daily Max	Daily Max	Minimum	Maximum	Daily Max	Daily Max
12/31/2004	0.00	0.10	0.00	0.00	-	6.53	2.00	0.00
3/31/2005	6.40	0.30	0.00	0.00	7.40	7.40	6.00	0.00
6/30/2005	2.70	0.50	0.00	0.00	8.15	8.15	0.00	0.00
9/30/2005	0.00	0.40	0.00	0.00	-	5.92	0.00	0.01
12/31/2005	0.00	0.40	0.00	0.00	-	5.92	0.00	0.01
3/31/2006	2.50	0.10	0.00	0.00	-	6.01	0.00	0.00
6/30/2006	0.00	0.20	0.00	0.00	-	6.21	0.00	0.00
9/30/2006	no discharge							
12/31/2006	0.00	0.20	0.00	0.00	6.59	6.59	0.00	0.00
9/30/2007	no discharge							
12/31/2007	0.00	3.20	0.00	0.00	-	5.78	5.50	0.01
3/31/2008	5.00	0.50	11.80	1.00	6.32	6.32	5.00	39.50
6/30/2008	no discharge							
9/30/2008	no discharge							
3/31/2009	no discharge							
6/30/2009	no discharge							
Average	1.66	0.59	1.18	0.10	7.12	6.48	1.85	3.95
Minimum	0.00	0.10	0.00	0.00	6.32	5.78	0.00	0.00
Maximum	6.40	3.20	11.80	1.00	8.15	8.15	6.00	39.50
# Exceedences	0	n/a	0	0	1	0	0	0

*Attachment C (cont.) - DMR Data Summary, October 1, 2004 through June 30, 2009***Outfall 002**

	Copper, total (as Cu)	Flow	Lead, total (as Pb)	Oil & Grease	pH		Solids, total suspended	Zinc, total (as Zn)
					6.5	8.3		
Limit	17.5	Report	20	5	SU	SU	30	65
Limit unit	ug/L	Mgal/d	ug/L	mg/L			mg/L	65
DMR Date	Daily Max	Daily Max	Daily Max	Daily Max	Minimum	Maximum	Daily Max	Daily Max
12/31/2004	0.00	4.40	0.00	0.00	-	7.20	4.00	0.00
3/31/2005	6.40	2.40	0.00	0.00	7.60	7.60	5.00	0.00
6/30/2005	3.40	4.40	0.00	0.00	7.90	7.90	0.00	0.00
9/30/2005	0.00	3.20	0.00	0.00	-	5.78	5.50	0.11
12/31/2005	0.00	3.20	0.00	0.00	5.78	5.78	5.50	0.01
3/31/2006	2.90	1.60	0.00	0.00	-	6.48	5.00	25.80
6/30/2006	0.00	2.40	0.00	0.00	-	6.44	0.00	0.00
9/30/2006	0.00	0.60	0.00	0.00	6.71	6.71	0.00	0.00
12/31/2006	0.00	0.90	0.00	0.00	6.43	6.43	0.00	0.00
9/30/2007	0.00	0.50	0.00	0.00	6.41	6.41	39.00	32.80
12/31/2007	0.00	0.40	0.00	0.00	-	5.92	0.00	0.01
3/31/2008	5.00	3.40	7.50	1.00	6.10	6.10	5.00	31.40
6/30/2008	5.00	1.60	7.50	1.00	6.85	6.85	5.00	29.40
9/30/2008	5.00	2.40	7.50	1.00	7.24	7.24	7.00	26.40
3/31/2009	0.00	0.30	0.00	0.00	6.84	6.84	0.00	0.00
6/30/2009	0.00	1.46	0.00	0.00	7.10	7.10	0.00	0.00
Average	1.73	2.07	1.41	0.19	6.81	6.67	5.06	9.12
Minimum	0.00	0.30	0.00	0.00	5.78	5.78	0.00	0.00
Maximum	6.40	4.40	7.50	1.00	7.90	7.90	39.00	32.80
# Exceedences	0	n/a	0	0	4	0	1	0