

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
ONE CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023**

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: MA0031071

NAME AND MAILING ADDRESS OF APPLICANT:

**Lowell Cogeneration Company L.P.
282 Western Avenue
Lowell, Massachusetts 01851**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**Lowell Cogeneration Company L.P.
282 Western Avenue
Lowell, Massachusetts 01851**

RECEIVING WATER(S): Pawtucket Canal to Merrimack River
(USGS Hydrologic Code #01070002 – Merrimack River Basin)

**RECEIVING WATER CLASSIFICATION(S): Class B - Warm water fishery,
Treated Water Supply, CSO**

SIC CODE: 4911 - electric power generation

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I. Proposed Action, Type of Facility and Discharge Location

The Lowell Cogeneration Plant, or “Facility”, is owned by Lowell Cogeneration Company L.P., the “permittee”, and operated by DPS Lowell Co-Gen, L.L.C. This Facility is a combined cycle power production plant primarily operated to provide electricity for the local electric power grid. The current NPDES permit, which was issued in 1987, authorized the discharge of up to 115,000 gallons per day (GPD) of cooling tower blowdown, boiler blowdown and demineralizer wastewater to the Pawtucket Canal through Outfall 001. The 1987 permit also authorized the discharge of storm water runoff, building floor drains, equipment drains and boiler blowdown through Outfall 002 (an internal outfall which leads to Outfall 001) to the Pawtucket Canal. See **Figure 1** for a map of the facility location. The Facility’s current permit expired on August 11, 1992. The permit was administratively continued because the permittee submitted a complete re-application before the expiration date. As a result, Lowell Cogeneration remains subject to its existing (1987) permit until EPA issues a new one.

Facility operation to generate electricity is driven by the economic and reliability needs of the regional independent system operator power pool, or ISO-New England. Operation has ranged from full time “Combined Cycle” operation (from 1988 through 1994) to intermediate operation in the late 1990’s through 2003, and most recently, peaking only when the gas turbine was operating in “Simple Cycle” mode. Combined Cycle operation includes operation of the gas turbine, the heat recovery steam generator, and the steam turbine/cooling tower. Simple Cycle operation is operation of the gas turbine only with the exhaust heat being vented to the atmosphere.

This Facility employs a natural gas or fuel oil-fired jet (combustion) turbine to produce up to 23 megawatts (MW) of electricity. The facility can also use the exhaust heat from the jet turbine’s operation in a heat recovery boiler followed by a steam turbine to produce an additional 8.5 MW of electricity. Under this mode of operation, the permittee can also provide steam, a byproduct of the electricity generating process, to local steam users for their heating or process needs. See **Figure 2** for a water balance of the facility and **Figure 3** for an operational schematic of the facility.

By letter of December 22, 1994, EPA authorized the permittee to install two steam boilers at the facility, which would run separately from the existing combined cycle operation. This was due to a contractual change that the permittee had with its power customer at the time which required the facility to be put on “stand-by” status, producing power only when called upon. Some time in 1995, the permittee installed and began operating these steam boilers to produce steam for local customers, including Joan Fabrics. Operation of these boilers is limited to when the combined cycle facility is off-line, except during transition periods.

Previously, the Facility’s main source of boiler makeup water was drawn from the Pawtucket Canal through a cooling water intake structure (CWIS) which was owned and operated by another entity, Joan Fabrics. Some time in 2005 or 2006, this entity

dismantled this CWIS, rendering this water source no longer available to the permittee. Therefore, at this time, the Facility is limited to using municipal water from the City of Lowell for its makeup water.

Since there is no longer a CWIS servicing this Facility, the permittee will not be subject to the regulations found in Section 316(b) of the CWA, 33 U.S.C. Section 1326(b). These regulations govern requirements related to CWISs and require “that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available (BTA) for minimizing adverse environmental impact.” The operation of CWISs can cause or contribute to a variety of adverse environmental effects, such as killing or injuring fish larvae and eggs by entraining them in the water withdrawn from a water body and sent through the facility’s cooling system, or by killing or injuring fish and other organisms by impinging them against the intake structure’s screens, trash racks, or other structures. Section 316(b) applies if the permit applicant seeks to withdraw cooling water from a water of the United States. Therefore, since this Facility no longer takes in water from this CWIS, 316(b) does not apply to this permit reissuance.

The draft permit includes a prohibition on the permittee from withdrawing water from a CWIS to be used at the facility. If the permittee considers constructing a new CWIS after this permit is issued, it must apply for a permit modification. In this modification, the permittee must provide specific details of the design, location, construction and capacity of this CWIS and explain how this CWIS design represents the BTA for minimizing adverse environmental impacts due to impingement mortality and entrainment. During the modification process, EPA and MassDEP may request additional information regarding BTA and the eventual modification may require additional or revised BTA measures from those proposed by the permittee.

II. Description of Treatment System and Discharges

Outfall 001 – Cooling Tower Blowdown, Boiler Blowdown, Water Softener Regeneration Wastewater, Demineralizer Wastewater

Although operations at the plant have diminished significantly since 1992, the permittee believes that future electricity and steam demands are sufficiently uncertain. Therefore, the permit renewal should maintain the existing discharge limitations for flow.

These wastewater flows are routed through a pipe which extends through the wall of the Pawtucket Canal below the mean low water level and is directed to a diffuser which consists of a single nozzle oriented perpendicular to the direction of the canal flow. This diffuser is at an elevation of about six inches below the mean water surface elevation that is experienced during a canal drawdown, which is described below. The nozzle was designed to accomplish a water velocity of about ten feet per second.

Under typical simple or combined cycle operation, the permittee treats its makeup water through a demineralizer that results in the discharge of approximately 4500 gallons per day (gpd) of wastewater to Outfall 001. In 2002, the permittee requested (**11/6/02 letter**

from D. McGrath to S. Zaya) and received authorization (**1/3/2003 letter from S. Zaya to D. McGrath**) to install a water softener system to provide makeup water for two, separate steam boilers. The use of these boilers and water softener system results in a wastewater volume of about 500 gpd, 90% less than the wastewater generated during operation of the demineralizer during simple or combined cycle operation.

In 2002, the permittee estimated that the separate boilers were operated for steam production about 80% of the time, although recently production has been reduced significantly. The demineralizer system is still used for the simple or combined cycle makeup water; serving as a backup system for the newer water softener units.

The permittee stated (**e-mail of 8/30/07 from D. McGrath to G. Papadopoulos**) that the plant operated approximately 30 hours in 2006 and approximately 22 hours in the first eight months of 2007. However, in light of current (2008) electricity market conditions, the permittee expects the facility to see increased demand, possibly operating hundreds or thousands of hours per year.

Outfall 002 – Storm Water, Building and Equipment Drains, Boiler Blowdown

This outfall includes intermittent flows of storm water runoff, floor drains, boiler blowdown and a cooling tower maintenance drain. Each of these sources may be sampled at an accessible point prior to commingling with other discharges and prior to commingling with flow in the outfall 001 conveyance, as shown on **Figure 2**.

Storm water which is collected on the property is passed through an oil/water separator (OWS) and discharged as necessary via Outfall 002. Due to the possibility for oil and grease (O&G) to be picked up from the site and transferred to this storm water collection system, the 1987 permit established an O&G limit of 15 mg/l for this discharge.

The OWS is a MDC-trap style which employs a flume at the outlet to normalize flows to allow for metering. This OWS system operates passively and discharges as the level gets high enough in the holding tank. In other words, this system is a gravity system and there is no pumping of water from this structure to Outfall 002.

The 1992 reapplication also noted that approximately 100 gpd was discharged from interior floor drains twice per week well as a daily boiler blowdown of about 1000 gallons. The 1992 reapplication also described a once per week discharge of 43,000 gallons, drained from the facility cooling towers during required maintenance. The frequency and volume of this discharge has been reduced significantly based upon reduced facility operations. These wastewater flows will be limited to the amounts in the previous permit and will only apply during dry weather conditions since the permittee may operate more frequently in the future.

In order to differentiate discharges associated with storm water and other wastewater, this permit has established separate wet weather and dry weather conditions for Outfall 002. See the discussion below for specific requirements.

Treatment Chemicals Used

The facility uses a variety of chemicals to assure that its equipment operates efficiently, primarily through the control of corrosion and biological growth. The 1987 permit specifically limited the chemical "Slimicide C-31" to a daily maximum concentration of 0.2 mg/l during days when blowdown occurred. The dosages of six other chemicals were also specifically limited in the 1987 permit, but as concentrations in the boiler water and cooling tower systems, not in the effluent. Since all of the chemicals used at the facility have been replaced or discontinued since 1987, the former effluent limit for Slimicide C-31 and the in-system concentrations for other products no longer apply.

In a letter of July 8, 2003 from Douglas McGrath of Lowell Cogen to Sharon Zaya of the EPA, the permittee provided an updated list of chemicals used in the facility makeup water and the typical dosages used during normal operation. The permittee confirmed that the chemicals list is still accurate. **(e-mail of 6/17/08 from K. Foley to G. Papadopoulos)** This listing of the chemicals and the dosages at which the permittee uses them under normal operating conditions are shown in permit Attachment B. These chemicals are used in the cooling tower and in the boilers and are discharged during the blowdown events of this equipment, up to once per day from each unit. As noted earlier, the cooling tower does not operate during the simple cycle, therefore only the chemicals associated with the separate steam boiler's blowdown are discharged during simple cycle operation.

If the permittee plans to modify its list of chemical additives, either by adding to the list, substituting a new chemical for one on the current list, or by altering the dosage of any chemical on the approved list, it must notify EPA of all proposed changes and include the reasons for making such changes, as specified in Part I.C of the permit.

Although no specific effluent limits have been established for any of the chemicals on the updated list, the permittee is authorized to use these chemicals up to the dosages noted in permit Attachment B. As an alternative to establishing effluent limitations or monitoring requirements for any of these chemicals, this draft permit has established a Whole Effluent Toxicity (WET) testing requirement. Any of these chemicals individually, at the dosages employed, would not likely cause toxicity in the receiving water based on their toxicity profiles and the dilution available. However, any toxicity associated with the discharge of any combination of these chemicals, in addition to the other pollutants present in the various discharges, is not known. In order to assess this toxicity potential, this draft permit has established WET testing to be conducted during periods when the discharges containing these chemicals would be occurring.

III. Receiving Water Description

Under the state water use classification system, the Massachusetts Department of Environmental Protection (MassDEP) has designated this segment of the Merrimack River, which runs from the Pawtucket Dam to Duck Island (Segment MA84A-02), as a Class B water (314 CMR 4.00). Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. Where designated, they shall be suitable for a source of public water supply following appropriate treatment. Class B waters shall be suitable for irrigation and other agricultural uses, and for compatible industrial cooling and process uses. The waters shall have consistently good aesthetic value.

This segment of the Merrimack River does not always meet the state water quality standards prescribed for Class B waters, especially after wet weather, and is included on MassDEP's 2006 303(d) list of impaired waters for metals, nutrients, and pathogens. In its 1999 water quality assessment report for the Merrimack River basin, the MassDEP recommended that in developing the next round of NPDES permits in the Merrimack River watershed, EPA conduct an evaluation of the permittee's instream temperature study and review the permittee's biofouling techniques. These issues have been addressed in this fact sheet.

The Pawtucket Canal was constructed in 1796 by the "Proprietors of Locks and Canals on the Merrimack River" and is comprised of a series of seven lock structures drawing water from the Merrimack River. This canal was rebuilt from 1822 to 1824 to serve the dual purpose of transportation and for the provision of power to this growing mill city. There were other canals built in later years connecting to the Merrimack River.

The flow of Merrimack River water into the Pawtucket Canal is controlled by Boott Hydropower (a subsidiary of Enel North America), for operating its hydroelectric power generation equipment. Boott Hydropower, "Boott", operates three separate hydroelectric power houses in the area which collectively generate about 25,000 kilowatts (kW) of power. Boott has a Federal Energy Regulatory Commission (FERC) license for these facilities that runs through April 2023. As part of its maintenance program for debris removal and to assure proper operation of the canals, Boott periodically undertakes drawdown of these canals, including the Pawtucket Canal and currently conducts several of these drawdowns per year. In addition to these maintenance drawdowns, requests from law enforcement or recreational concerns could also require drawdowns. Boott typically notifies major users or abutters of the canals of a scheduled drawdown, including the permittee.

In a letter to the permittee dated October 2, 1990, Boott estimated that the "steady representative water flow conditions" in the Pawtucket Canal are consistent with a flow of about 500 cubic feet per second (cfs). The letter also noted that on September 27, 1990, the flow in the canal was approximately 30 cfs due to a major water user being shut

down. Boott indicated that the flow in the Pawtucket Canal increases above 500 cfs whenever any of their hydroelectric power stations are placed on line.

For the purposes of the 1987 permit, EPA assumed a low flow of 50 cfs, which had been estimated as the typical low flow during drawdown periods. During these drawdowns, the level of water in the Pawtucket Canal is very low and may not go from bank to bank in some areas. Therefore, in order to limit impacts during these periods due to elevated temperatures and pollutants, discharge during these drawdown periods is limited to the maximum extent practicable. The permittee is believed to have flexibility regarding when it can discharge its cooling tower and boiler blowdown discharges, and this requirement is not believed to place an undue burden on facility operations.

In determining a dilution ratio for the 1987 permit, EPA used the low flow figure of 50 cfs. In assessing whether there were any thermal impacts associated with this discharge, the 1987 permit cited Massachusetts regulations which recommended using 25% of the receiving water width and 25% of its depth for heat dissipation calculations. This approach resulted in one sixteenth (1/16) of the flow of 50 cfs to be used, or 3.1 cfs. The permit calculated temperature rises of not more than 1.8 °F above the ambient in the summer and not more than 1.6 °F above the ambient in the winter and concluded that the discharge met the State requirement of no more than a 5 °F rise in receiving water temperature due to a thermal discharge. This calculation also showed that the 83 °F maximum in-stream temperature standard would not be violated in the summer, based on an upstream temperature of 72 °F and a combined facility discharge temperature of not more than 105 °F.

IV. Limitations and Conditions

The effluent limitations and all other requirements described in Part VI of this Fact Sheet may be found in the draft permit.

V. Permit Basis: Statutory and Regulatory Authority

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. This draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and any 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, EPA must consider the most recent technology-based treatment and water quality-based requirements. Subpart A of 40 CFR Part 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. EPA is required to consider technology and water quality-based requirements as well as all limitations and requirements in the existing permit when developing permit limits.

Technology-Based Requirements

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 toxic and non-conventional pollutants. The effluent limitations guidelines which are applicable to this facility are those for the Steam Electric Power Generating Point Source Category and are found at 40 CFR Part 423. These regulations apply to those facilities which use a fossil type fuel (such as natural gas) to produce electricity for distribution and sale with a thermal cycle which employs a steam water system as the thermodynamic medium. Although this facility falls under this definition only under combined cycle operation, the discharges from this facility are similar to those of conventional steam electric facilities. Therefore, as was done in the 1987 permit, the steam electric ELGs were used as guidance in establishing effluent limitations for this permit.

The steam electric ELGs have established limits for cooling tower blowdown discharges. These include limiting all 126 priority pollutants to no detectable amount, with the exception of total chromium and total zinc, which have specific limits of 0.2 mg/l and 1.0 mg/l, respectively. The draft permit has established these requirements.

In general, the statutory deadline for non-POTW, technology-based effluent limitations must be complied with as expeditiously as practicable but in no case later than three years after the date such limitations are established and in no case later than March 31, 1989 (see 40 CFR §125.3(a)(2)). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA can not be authorized by a NPDES permit.

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 on a case-by-case basis using best professional judgment (BPJ).

The effluent monitoring requirements have been established to yield data representative of the discharges under the authority of Section 308(a) of the CWA, according to regulations set forth at 40 CFR § 122.41(j), 122.44(i) and 122.48. The monitoring program in the permit specifies routine sampling and analysis which will provide continuous information on the reliability and effectiveness of the installed pollution

abatement equipment. The approved analytical procedures are to be found in 40 CFR 136 unless other procedures are explicitly required in the permit.

Water Quality-Based Requirements

Water quality-based limitations are required in NPDES permits when EPA and the State determine that effluent limits more stringent than technology-based limits are necessary to maintain or achieve state or federal water quality standards (WQS). See Section 301(b)(1)(C) of the CWA.

Receiving water requirements are established according to numerical and narrative standards adopted under state law for each water quality classification. When using chemical-specific numeric criteria to develop permit limits, both the acute and chronic aquatic-life criteria, expressed in terms of maximum allowable in-stream pollutant concentration, are used. Acute aquatic-life criteria are considered applicable to daily time periods (maximum daily limit) and chronic aquatic-life criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific limits are allowed under 40 CFR § 122.44(d)(1) and are implemented under 40 CFR § 122.45(d).

A facility's design flow is used when deriving constituent limits for daily and monthly time periods as well as weekly periods where appropriate. Also, the dilution provided by the receiving water is factored into this process where appropriate. Narrative criteria from the state's water quality standards are often used to limit toxicity in discharges where (a) a specific pollutant can be identified as causing or contributing to the toxicity but the state has no numeric standard; or (b) toxicity cannot be traced to a specific pollutant.

EPA regulations require NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve state or federal WQS. The permit must address any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality criterion. See 40 CFR Section 122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion. In determining reasonable potential, EPA considers (a) existing controls on point and non-point sources of pollution; (b) pollutant concentration and variability in the effluent and receiving water as determined from the permit application, monthly Discharge Monitoring Reports (DMRs), and State and Federal Water Quality Reports; (c) sensitivity of the species to toxicity testing; (d) known water quality impacts of processes on wastewater; and, where appropriate, (e) dilution of the effluent in the receiving water.

WQS consist of three parts: (a) beneficial designated uses for a water body or a segment of a water body; (b) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s); and (c) antidegradation requirements to ensure that once a use is attained it will not be degraded. The Massachusetts Surface Water Quality Standards (MA SWQS), 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 criterion is established. The conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain WQS.

Consistent with the MA SWQS promulgated at 314 CMR 4.03(2) and MassDEP guidance documents, MassDEP may decide to exercise its discretion to set water quality based thermal discharge limits based on a “mixing zone”. Generally, mixing zones are areas in which exceedances of numeric WQS may be allowed, provided that, among other things, these exceedances do not result in acute toxicity and that the mixing zone will still be protective of the narrative requirements of the WQS. In addition, mixing zones cannot be disproportionately large so as to interfere with the attainment of the designated uses assigned to the water body segment. All applicable numeric water quality criteria must be met at the edge of the mixing zone and requirements of the state mixing zone must also be satisfied.

Antibacksliding

A permit may not be renewed, reissued or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the anti-backsliding requirements of the CWA [see Sections 402(o) and 303(d)(4) of the CWA and 40 CFR §122.44(l)(1 and 2)]. EPA's antibacksliding provisions prohibit the relaxation of permit limits, standards, and conditions except under certain circumstances. Effluent limits based on BPJ, water quality, and state certification requirements must also meet the antibacksliding provisions found at Section 402(o) and 303(d)(4) of the CWA. Some limits and monitoring requirements in the 1987 permits have been reduced or eliminated in this draft permit. For Outfall 001, the Slimicide C-31 limit and delta T monitoring requirement have been eliminated. For Outfall 002, the chemical oxygen demand (COD) and volatile organic compound (VOC) monitoring have been eliminated.

The rationale for these changes is provided in the limits discussion in Part VI. below and is consistent with the antibacksliding regulations. For the elimination of the limits for Slimicide C-31 and the monitoring for delta T, EPA determined that the “material and substantial alterations language” at 40 CFR 122.44(l)(2)(i)(A) applies. In the case of the Slimicide C-31, this chemical was long ago discontinued and other chemicals which perform similar functions are now used. The delta T was defined in the 1987 permit as “the difference between the plant cooling water discharge temperature and the plant cooling water intake temperature”. This requirement is no longer relevant since water is no longer withdrawn from the receiving stream through a CWIS as discussed earlier.

For the elimination of monitoring for COD, EPA determined that the regulations at 40 CFR 122.44(l)(2)(i)(B) apply, which state that “information is available which was not available at the time of permit issuance”. There have been several years of COD monitoring data evaluated and this parameter has consistently been at low levels in the

effluent as shown in Attachment B. Therefore, EPA determined that monitoring is no longer necessary as such levels do not represent a reasonable potential for water quality violations. Although the VOC monitoring requirement has been eliminated from Outfall 002, the priority pollutant requirement for Outfall 001, which includes VOCs, has replaced it. This includes a no detect requirement for all priority pollutant listed VOCs in the cooling tower blowdown discharge. In addition, a WET testing requirement has been established for Outfall 001 which will include all of the major wastewater flows.

Antidegradation

Federal regulations found at 40 CFR Section 131.12 require states to develop and adopt a statewide antidegradation policy which maintains and protects existing instream water uses and the level of water quality necessary to protect the existing uses, and maintains the quality of waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water. The Massachusetts Antidegradation Regulations are found at Title 314 CMR 4.04. There are no new or increased discharges being proposed with this reissuance.

Section 316 of the Clean Water Act

With any NPDES permit issuance or reissuance, EPA is required to evaluate or re-evaluate compliance with applicable standards, including the standards in Section 316(a) of the CWA regarding thermal discharges, and Section 316(b) of the CWA regarding cooling water intake structures (CWIS). CWA Section 316(a) allows for variance-based effluent limitations for thermal discharges if certain conditions are met. If the applicant demonstrates to the satisfaction of EPA (or, if appropriate, the state) that the alternative effluent limitations proposed will assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the receiving water body, then the permitting authority may issue the permit with such alternative limitations. CWA Section 316(b) governs CWIS requirements and applies where a permit applicant seeks to withdraw cooling water from the waters of the United States. To satisfy Section 316(b), the location, design, construction, and capacity of the facility's CWIS must reflect the Best Technology Available (BTA) for minimizing adverse environmental impacts.

Section 316(a) applies to this permit because of the discharge of NCCW water potentially above the warm water fishery standard of 83 °F. Section 316(b) previously applied to this permit due to the use of a CWIS and will apply in the future if the permittee constructs a new CWIS. Therefore, the 316(b) regulations are also discussed below.

CWA 316(a)

In developing effluent limitations, EPA is to determine technology-based and water quality-based requirements, and whichever is more stringent would govern the permit requirements. For thermal discharges, however, EPA may also consider granting a

variance under Section 316(a) (as codified at 40 CFR Part 125, Subpart H) from either or both the technology-based and water quality-based effluent limitations if the permittee can demonstrate that less stringent variance-based limitations will nevertheless be sufficient to “assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife” (BIP) in and on the water body receiving the discharge. This demonstration must show that the alternative effluent limitations desired by the permittee, considering the cumulative impact of its thermal discharge together with all other significant impacts on the species affected, will assure the protection and propagation of the BIP.

As a practical matter, EPA has with some permits simply developed permit limitations under a Section 316(a) variance if a set of limitations were determined to be sufficient to assure protection and propagation of the BIP. In such cases, determining the technology-based and water quality-based limitations would have served no practical purpose. Similarly, in some cases, EPA has determined water quality-based conditions without determining the technology-based requirements, when we had reason to believe that it was clear that the water quality-based requirements would be more stringent than the technology-based standards.

Based on the permittee’s modeling results described earlier, it appears that there is sufficient dilution within the mixing zone for the discharge at Outfall 001 which is expected to result in compliance with the 83 °F standard. Therefore, a 316(a) variance from water quality-based standards is not required for this discharge. Similarly, EPA does not believe it is necessary to establish technology-based limits, as we believe that the limits established for this outfall will assure the protection and propagation of the BIP. Thus, the effluent temperature limits in this permit are based on a CWA Section 316(a) variance from technology-based limits.

CWA 316(b)

The basis for cooling water intake structure (CWIS) requirements is found in the CWA in Section 316(b), 33 U.S.C. Section 1326(b). Section 316(b) governs requirements related to CWISs and requires “that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.” The operation of CWISs can cause or contribute to a variety of adverse environmental effects, such as killing or injuring fish larvae and eggs by entraining them in the water withdrawn from a water body and sent through the facility’s cooling system, or by killing or injuring fish and other organisms by impinging them against the intake structure’s screens, racks, or other structures. Section 316(b) applies if the permit applicant seeks to withdraw or withdraws cooling water from a water of the United States. Although Section 316(b) applied when this permit was issued in 1987, 316(b) does not currently apply as the permittee no longer derives its cooling water from a CWIS. However, the permittee has noted that there is the potential for a new CWIS in the Pawtucket Canal, which would require a permit modification. The Facility had previously withdrawn water from the Pawtucket Canal through a CWIS which has since been dismantled and is no longer available to the permittee.

State Certification

Under Section 401 of the CWA, EPA is required to obtain certification from the state in which the discharge is located that all water quality standards or other applicable requirements of state law, in accordance with Section 301(b)(1)(C) of the CWA, are satisfied. EPA permits are to include any conditions required in the state's certification as being necessary to ensure compliance with state water quality standards or other applicable requirements of state law. See CWA Section 401(a) and 40 CFR §124.53(e). Regulations governing state certification are set out at 40 CFR §124.53 and §124.55. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 CFR §122.44(d).

VI. Explanation of Permit's Effluent Limitations

Outfall 001

Attachment A shows the discharge monitoring report (DMR) data for Outfall 001 for the reporting period of January 2003 to December 2007. For Outfall 001, limited data reflect the fact that there has been minimal generating activity in the last 3 years.

Flow

The flow limits in this draft permit have been maintained at 86,500 gallons per day (GPD) as a monthly average and 115,000 GPD as a daily maximum. Although these flow limits represent a period of more frequent operation not reflective of the last few years, they have been maintained as future operational needs are uncertain and the permittee may resume more frequent operations at any time. During the reporting period noted above, effluent flows have ranged from 23 GPD to about 47,000 GPD.

Temperature

The temperature modeling discussed earlier showed that even at the permitted effluent temperature limit of 105 °F, the 83 °F instream standard would not be violated. As described earlier, EPA and MassDEP have agreed that the permittee's modeling for temperature for this outfall represents a mixing zone consistent with the MA SWQS at 314 CMR 4.03(2). Past monitoring data in Attachment A indicate that the effluent temperature ranged from 56 °F to 89 °F during the reporting period. Blowdown of the cooling tower and boiler associated with Outfall 001 is conducted as needed, up to once per day. This period noted in Attachment A, however, reflected minimal generating activity and very limited use of the cooling tower. If generating activity is increased, the permittee expects to use the cooling tower more often and to discharge cooling tower and boiler blowdown more regularly. DMR data from several years ago which reflected combined cycle operation resulted in effluent temperatures approaching the limit of 105°F. Therefore, since the permittee may operate more frequently in the future, this limit will be maintained.

The 1987 permit included a monitoring requirement for the temperature rise between the intake water and the effluent, or the “delta-T”. This value was previously derived by comparing the intake temperature at the CWIS to the effluent temperature. The delta T monitoring or limits are typically required of once through non-contact cooling water (NCCW) systems, where the intake water is run through piping and equipment for the purposes of cooling equipment and condensing steam, so that the effluent temperature would roughly measure the heat transferred from the process to the NCCW. However, the permittee does not employ a once through cooling system. As described earlier, the permittee periodically discharges blowdown from its boilers or cooling tower as required, typically once per day or less frequently. Therefore, since there is not a direct temperature relationship between the makeup water and the effluent discharged from these blowdown events, the delta T value is not relevant. In fact, the permittee has sometimes reported a negative number for delta T, when the intake water was at a higher temperature than its eventual discharge temperature. Therefore, the delta T monitoring requirement has been removed from this draft permit as it is no longer relevant.

pH

The pH range is limited to the Class B range of 6.5 to 8.3 standard units which is the range required by the state WQS and which can be found at 314 CMR 4.05. The previous upper end of the permitted range was 8.0 s.u., which represented the State water quality standard rate at the time of the 1987 permit issuance. During the reporting period, the pH has ranged from 6.7 to 7.8 s.u. with no violations of the permitted range.

Chlorine

The 1987 permit authorized the discharge of total residual chlorine (TRC) since the permittee routinely chlorinated the cooling tower water to control biofouling. Ever since the permittee switched from canal water to city water for its makeup water (due to the previously used CWIS being dismantled), there has been no chlorination of any discharge. However, city water that is used for makeup water does contain chlorine. Therefore, the TRC limits of the 1987 permit will be maintained.

Treatment Chemicals

As noted earlier, the limit for the chemical “Slimicide C-31” which was previously used at the facility and limited in the 1987 permit at 0.2 mg/l has been discontinued. Alternatively, this permit authorizes the use of the chemicals as shown in Attachment B of the permit. All of the previously listed dosages of chemicals that were listed in the 1987 permit have also been discontinued, as these chemicals are no longer used, being replaced by chemicals performing similar functions. In addition, a WET testing requirement is being established to assess whether the combination of these treatment chemicals and other pollutants in the discharge exhibits toxic effects.

Oil & Grease

The 1987 permit included monthly average and daily maximum oil & grease (O&G) limits of 15 mg/l. The steam electric ELGs established a monthly average O&G limit of 15 mg/l for "low volume waste sources". The ELGs define low volume waste sources as including, but not limited to, discharges from boiler blowdown and floor drains, which are also discharged from this facility. The permittee also discharges demineralizer wastes and equipment drains, which could also be classified as low volume waste sources. Although recent monitoring has shown O&G not detected in most cases, the limit of 15 mg/l has been maintained for this outfall as there have been some detectable levels in the reporting period and since there are multiple sources that could contribute O&G to this outfall. The frequency of monitoring has been reduced from twice per month to once per month.

Metals and Volatile Organic Compounds

Sampling conducted for the 1992 permit reapplication showed detectable levels of 4 different volatile organic compounds (VOCs) ranging from 5 ug/l to 28 ug/l in Outfall 001 and from 3 ug/l to 66 ug/l in the cooling tower basin. There were no VOCs detected in the Outfall 002 or intake samples. In addition, copper concentrations of 0.51 and 0.39 mg/l were found in the cooling tower basin and Outfall 001 respectively, while zinc concentrations ranging from 0.03 to 0.40 mg/l were found at all 4 sampling locations. For the cooling tower blowdown portion of this discharge, the permit has established a non-detect requirement for all priority pollutants, with the exception of chromium and zinc which are limited to 0.2 mg/l and 1.0 mg/l, respectively. As discussed earlier, this requirement is derived from the ELGs for steam electric facilities.

Whole Effluent Toxicity Testing

EPA's Technical Support Document for Water Quality-Based Toxics Control, March 1991, EPA/505/2-90-001, recommends using an "integrated strategy" containing both pollutant-specific (chemical) approaches and whole effluent (biological) toxicity approaches to better detect toxics in effluent discharges. Pollutant-specific approaches, such as those in EPA's Gold Book (ambient water quality criteria) and state regulations, address individual chemicals, whereas whole effluent toxicity approaches evaluate interactions between pollutants, i.e., the "additivity", "antagonistic" and/or "synergistic" effects of pollutants. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts, as do the Massachusetts SWQS, which state, in part that "all surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife." The NPDES regulations at 40 CFR §122.44(d)(1)(v) require whole effluent toxicity (WET) limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an instream excursion above the State's narrative criterion for toxicity. This WET test is a proactive method of protecting the

environment so as to properly carry out EPA's Congressional mandate to prevent the discharge of toxic substances into the Nation's waterways.

Region I adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. EPA Region I modified this strategy to protect aquatic life and human health in a manner that is cost-effective as well as environmentally protective.

The Facility discharges wastewater that has an unknown potential for causing toxicity to organisms, especially from the blowdowns that contain concentrations of pollutants like metals as well chemicals to control corrosion and biological growth. Presently, there is inadequate information for EPA to base a "reasonable potential" determination concerning this discharge's toxicity potential to cause or contribute to an excursion of the Commonwealth's narrative water quality criterion. Thus, the establishing of WET testing in the draft permit is necessary, reasonable and appropriate in order to gather this information and make a technically-based "reasonable potential" determination regarding whether or not this discharger is unknowingly contributing toxics to the receiving water. This approach is consistent with that recommended in Technical Support Document for Water Quality-based Toxics Control, March 1991, EPA/505/2-90-001, p. 60.

Since the facility uses a combination of treatment chemicals in its discharges, some of which have toxic effects individually, and there have been several metals and VOCs previously detected in the effluent, EPA has determined that there has to be some characterization of the toxicity of these combined pollutants. Therefore, EPA is requiring WET testing to be conducted in the first year of the permit and every second year thereafter. This testing shall be conducted while the permittee is discharging cooling tower blowdown, boiler blowdown and demineralizer wastes. Although the typical WET sampling is a 24 hour composite sample, this permit requires an 8 hour composite. This is meant to encompass most of the time frame of a cooling tower blowdown, which was estimated at 0.43 days (about 10 hours) in the 1992 permit application. The boiler blowdown was estimated to take about 0.1 days, or about 2 hours. The draft permit requires the permittee to report the results of acute WET tests using the freshwater species Daphnid, Ceriodaphnia dubia in the survival and reproduction test and the Fathead Minnow, Pimephales promelas in the larval growth and survival test. The permittee shall be limited to an LC₅₀ of equal to or greater than 50%. This limit is the same as the one in the 1987 permit and is consistent with the requirements of other dischargers which have dilution available of greater than 100:1.

See Attachment A, Freshwater Acute Toxicity Test Procedure and Protocol, of the draft permit for the complete WET testing requirements. WET samples shall be taken during periods that include discharge of all three process waters listed above. This WET sampling shall be conducted any time during the calendar quarter of July 1 to September 30.

If these WET tests indicate persistent toxicity, the Regional Administrator and the Commissioner may decide to modify the permit. Such modifications may include additional toxicity limits and/or additional pollutant limits to adequately protect the

receiving water quality during the remainder of the permit. Results of these toxicity tests will be considered "new information not available at the time of permit development." Therefore, EPA is allowed to use this information to modify an issued permit under the authority described in 40 CFR §122.62(a)(2).

Outfall 002

Attachment C shows the discharge monitoring report (DMR) data for Outfall 002 for the reporting period of January 2005 to December 2007.

The 1987 permit had a monthly storm water sampling requirement for this outfall. Other flows to this outfall, which is an internal outfall that leads to the wall discharge at Outfall 001, include building floor drain water, equipment drain water and intermittent boiler blowdown. The reissued permit will have separate dry and wet weather monitoring requirements for this outfall.

Wet weather conditions

Wet weather monitoring is required 4 times per year and will monitor for flow, pH, TSS and oil & grease (O&G). This monitoring frequency has been reduced because past monitoring has shown relatively low levels for these parameters. For wet weather conditions, the Outfall 002 limit for O&G has been maintained at 15 mg/l to assure that the OWS is working properly. The TSS monitoring will serve as an indicator of how well the permittee maintains its paved areas and keeps excessive solids from entering the receiving water in storm water runoff. The pH range is required to be monitored without a limit.

Since the permittee can control most of the dry weather contributions to this outfall, it shall attempt to conduct this wet weather sampling when no other discharges to this outfall are occurring to the extent practicable. This will be useful to try to pinpoint whether any elevated concentrations of parameters are due to wet or dry weather contributions.

Dry weather conditions

Dry weather monitoring is required monthly and includes limits for flow, oil & grease and pH, similar to those of the 1987 permit. The oil & grease limit is still necessary due to occasional detected levels in the effluent. There is no TSS monitoring required during dry weather, since the levels of TSS have been very low or not detected. Solids in this outfall would be more likely during wet weather, since solids on the facility's paved areas may be picked up during precipitation events and routed to the storm line. Therefore, as noted above, TSS monitoring will continue during wet weather conditions only.

For dry weather conditions, the O&G limit for Outfall 002 will remain at 15 mg/l to assure that the oil/water separator is working properly and not passing through these discharges to Outfall 001.

The pH is limited during dry weather conditions to the range of 6.5 to 8.3 s. u. which is the range required by the state WQS as noted above. The previous upper end of the permitted range was 8.0 s.u., which represented the State water quality standard rate at the time of the 1987 permit issuance. During the reporting period, the pH has ranged from 6.9 to 7.8 s.u. with no violations of the permitted range.

The monitoring requirements for COD and VOCs required by the 1987 permit have been discontinued. The previous DMR data show COD levels ranging from 1 – 6 mg/l and these levels do not represent a water quality concern. The 1987 permit required VOC monitoring to be conducted twice during the first six months of the permit. The permit reapplication found low levels of some VOCs as discussed earlier. Alternatively, an annual priority pollutant scan has been established in the draft permit for Outfall 001, which will include a requirement of no detection for VOCs and other pollutants.

VII. Essential Fish Habitat Determination (EFH)

“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 Marine Fisheries Service (NMFS) if EPA’s actions or proposed actions that it funds, permits, or undertakes, may adversely impact any essential fish habitat, such 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.

Essential fish habitat is only designated for species for which federal fisheries management plans exist (16 U.S.C. §1855(b)(1)(A)). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999. The Merrimack River in the vicinity of these discharges is not covered by the EFH designation for riverine systems and thus EPA has determined that EFH consultation with NMFS is not required.

VIII. Endangered Species Act (ESA)

Section 7(a) of the Endangered Species Act (ESA) of 1973, as amended 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) typically administer Section 7 consultations for bird, terrestrial, and freshwater aquatic species. The NMFS typically administers Section 7 consultations for marine species and anadromous fish.

EPA has reviewed the listing of 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. Therefore, EPA does not need to formally consult with NMFS or USFWS in regard to the provisions of the ESA.

EPA has structured the proposed limits to be sufficiently stringent to assure that Water Quality Standards and 316(a) variance provisions will be met, both for aquatic life protection and human health protection. 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 NMFS and USFWS.

Other Conditions

The remaining conditions of the permit are based on the NPDES regulations, 40 CFR Parts 122 through 125, and consist primarily of management requirements common to all permits.

IX. State Certification Requirements

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving waters certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State WQS. The staff of MassDEP has reviewed the draft permit and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

X. Public Comment Period, Public Hearing, and Procedures for Final Decision

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 George Papadopoulos, U.S. EPA, Office of Ecosystem Protection, Industrial Permits Branch, 1 Congress Street, Suite 1100, Boston, Massachusetts 02114-2023. 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 C.F.R. § 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 C.F.R. § 124.19.

XI. EPA and MassDEP Contacts

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 the EPA and MassDEP contacts below:

George Papadopoulos, Industrial Permits Branch
One Congress Street - Suite 1100 - Mailcode CIP
Boston, MA 02114-2023
Telephone: (617) 918-1579 FAX: (617) 918-1505

Paul Hogan, Massachusetts Department of Environmental Protection
Division of Watershed Management, Surface Water Discharge Permit Program
627 Main Street, 2nd Floor, Worcester, Massachusetts 01608
Telephone: (508) 767-2796 FAX: (508) 791-4131

September 19, 2008
Date

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

Attachment A

Outfall 001 DMR Data Summary

	Flow, GPD		Oil & Grease, mg/l		pH, s.u.		Effluent Temp, °F	Delta T, °F
	MA	DM	MA	DM	Min	Max	DM	DM
January 2003	8823	20700	< 5	< 5	7.5	7.8	57.6	21
February	6320	8600	< 5	< 5	7.5	7.8	64.4	25
March	9800	13000	< 5	< 5	7.5	7.7	69.6	23.7
April	7875	24700	< 5	< 5	7.5	7.6	78.7	19.5
May	16194	74400	< 5	< 5	7.5	7.7	75.9	10.2
June	8613	31200	5.7	6.3	7.5	7.6	89.4	9.7
July	7300	30500	< 5	< 5	7.6	7.7	89.7	11.7
August	3668	13400	< 5	< 5	7.4	7.6	86.6	8.2
September	13700	46000	< 5	< 5	7.0	7.7	80.6	8.1
October	ND	ND	ND	ND	ND	ND	ND	ND
November	27787	46900	< 5	< 5	7.6	7.7	63.8	16.8
December	ND	ND	ND	ND	ND	ND	ND	ND
January 2004	24380	33800	< 5	6	7.6	7.7	56.2	17.6
February	22124	28900	< 5	< 5	7.6	7.7	58.8	18.5
March	19013	28900	< 5	< 5	7.6	7.7	58.9	15.8
April	18240	23900	< 5	< 5	7.5	7.7	61.9	3.7
May	14456	19400	0.6	6.1	7.6	7.7	70.1	7.8
June	19046	28600	< 5	< 5	7.3	7.7	78.5	4.9
July	19232	24600	< 5	< 5	7.1	7.7	76.6	0.3
August	18513	35600	5.4	5.8	6.8	7.5	84	9.7
September	23	500	< 5	< 5	6.7	7.3	76.7	0
October	ND	ND	ND	ND	ND	ND	ND	ND
November	ND	ND	ND	ND	ND	ND	ND	ND
December	287	4500	< 5	< 5	ND	7.7	62.5	-12.9
January 2005	132	4100	< 5	< 5	ND	7.7	60	10
Feb to May	ND	ND	ND	ND	ND	ND	ND	ND
June	167	5000	ND	< 5	ND	7.4	67	- 6
July	ND	ND	ND	ND	ND	ND	ND	ND
August	307	9500	ND	< 5	ND	7.6	79.3	2
Sept. 2005 to August 2006	ND	ND	ND	ND	ND	ND	ND	ND
Sept. 2006	490	14700	< 5	< 5	ND	7.1	ND	ND
Oct. 2006 to March 2007	ND	ND	ND	ND	ND	ND	ND	ND
April 2007	77	2300	< 5	< 5	ND	7.0	ND	ND
May to Dec.	ND	ND	ND	ND	ND	ND	ND	ND

GPD = gallons per day; MA = monthly average; DM = daily maximum
Attachment B

Outfall 002 DMR Data Summary

	Flow, GPD	TSS mg/l	Oil & Grease, mg/l	COD mg/l	pH, s.u.	
					Min	Max
January 2005	194	3	< 5	1	ND	7.7
February	107	3	< 5	1	ND	7.6
March	97	1	< 5	5	ND	7.6
April	267	2	< 5	4	ND	7.1
May	ND	ND	ND	ND	ND	ND
June	167	1	< 5	2	ND	7.1
July	484	1	< 5	5	ND	7.7
August	750	1	< 5	4	ND	7.5
September	533	1	< 5	2	ND	7.5
October	903	2	< 5	1	ND	7.8
November	167	1	< 5	5	ND	7.6
December	129	3	< 5	5	ND	7.8
January 2006	129	4	< 5	3	ND	7.6
February	143	1	< 5	3	ND	7.3
March	129	1	< 5	2	ND	7.5
April	200	1	< 5	1	ND	7.8
May	452	1	< 5	5	ND	7.6
June	267	4	< 5	1	ND	7.7
July	ND	ND	ND	ND	ND	ND
August	ND	ND	ND	ND	ND	ND
September	167	1	< 5	4	ND	7.5
October	129	1	< 5	5	ND	7.2
November	133	2	< 5	5	7.5	7.5
December	161	4	< 5	4	7.2	7.65
January 2007	ND	5	< 5	5	7.4	7.6
February	107	1	5.1	5	7.5	7.6
March	290	1	< 5		7.6	7.5
April	400	2	< 5	5	6.9	7.6
May	419	1	< 5	5	7.2	7.2
June	167	1	< 5	5	6.9	7.3
July	129	1	< 5	5	7.0	7.8
August	194	1	< 5	5	6.9	7.3
September	800	2	< 5	5	7.1	7.2
October	161	1	< 5	5	6.9	7.6
November	100	1	< 5	6	6.9	7.3
December	ND	ND	ND	ND	ND	ND

GPD = gallons per day; MA = monthly average; DM = daily maximum