

**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: MA0005011

PUBLIC NOTICE START AND END DATES: July 27, 2007 – August 25, 2007

NAME AND MAILING ADDRESS OF APPLICANT:

Southworth Company
36 Canal Road
Turners Falls, MA 01376

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Southworth Company
Turners Falls Mill
36 Canal Road
Turners Falls, MA 01376

RECEIVING WATER: Connecticut River and Power Canal (Connecticut River Basin, MA-34)

RECEIVING WATER CLASSIFICATION: Massachusetts Class B (Warm Water)

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1. Proposed Action

The above named applicant has applied to the U. S. Environmental Protection Agency (EPA) for re-issuance of a National Pollutant Discharge Elimination System Permit to discharge treated process wastewater, non-contact cooling water, power generation water, and storm water runoff into the designated receiving water. The previous permit was issued to Esleek Manufacturing Company on December 8, 2000, took effect 60 days later, was modified on May 17, 2001, and expired on December 8, 2005. EPA received the reapplication for permit issuance on July 6, 2005. The permit was transferred to Southworth Company, Turners Falls Mill, from Esleek Manufacturing Company on April 6, 2006 and the permit was continued in force because of the timely reapplication submitted to and received by EPA. Supplementary information requested by EPA was provided to EPA by Southworth Company on May 21, 2006.

2. Type of Facility

The Southworth Company Turners Falls Mill manufactures technical, communication, and artist grade papers from wood pulp and cotton fiber. All wood pulp and cotton fiber needed for papermaking is currently purchased from off site. In the future, the Mill may also periodically produce some cotton rag pulp on-site from textile waste for use in the papermaking process. This is the former Esleek Manufacturing Company, which was purchased by Southworth on February 24, 2006.

3. Discharge Location and Description

The Mill's water supply is from the Power Canal which bypasses water from the Connecticut River for power generation at Turners Falls. In addition, a relatively small amount of potable and process water is obtained from the municipal water supply. Process water is treated by flocculation and sand filtration, with the filter backwash pumped to a sedimentation tank. Sludge from the sedimentation tank is discharged to the Town of Montague municipal sewer system, and the supernatant is returned to the flocculation/sand filtration process.

The Mill's process wastewater is treated by pH neutralization and coagulation using polymers, followed by passing through microstrainers where solids are removed. The treated process wastewater then discharges to the Power Canal through Outfall 001. The discharge enters the Canal through a diffuser near the bottom of the Canal just upstream from the Turners Falls Road Bridge. Rapid mixing is assured by the high velocity of the Canal flow, combined with the multiple openings in the diffuser pipe across the bottom of the Canal. The solids are backwashed from the microstrainers, thickened continuously and discharged to the Town of Montague municipal sewer system.

A relatively small amount of high-BOD wastewater, including high-starch washes is discharged to the Town of Montague municipal sewer system, along with the process wastewater treatment sludge and sanitary wastewater.

Outfall 002, which contains the Mill's discharges of non-contact cooling water, water wheel

(power generation) water, and storm water runoff, discharges to the Connecticut River on the northwest side of the Mill. The non-contact cooling water is regulated by this permit, and the storm water runoff is regulated under EPA's multi-sector general permit for storm water.

Attachment A contains a summary of Mill's effluent quality, based on recent years' discharge monitoring reports (DMRs) submitted by the company under its current permit. **Figure 1** is a map of the discharge locations. **Attachment B** contains a graphic illustration of the water supply and wastewater treatment processes.

4. Receiving Water Description

The Connecticut River is designated as a Class B warm water body by the Massachusetts Surface Water Quality Standards (314 CMR 4.06). Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value. [314 CMR 4.05(3)(b)]

Section 303(d) of the Federal Clean Water Act (CWA) requires states to identify those water-bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls, and as such, require the development of total maximum daily loads (TMDLs). The Connecticut River at the point of discharge is on the most recently EPA approved Massachusetts list of waters requiring the development of TMDLs (i.e., 303(d) list or Category 5 of the Massachusetts Year 2004 Integrated List of Waters) for priority organics (PCBs), flow alteration, and suspended solids. It is also on the Proposed 2006 CWA 303(d) List for those same reasons. The flow alteration is due to the existence of the power canal.

5. Permit Basis: Statutory and Regulatory Authority

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 effluent limitations and other requirements, including monitoring and reporting, in accordance with various statutory and regulatory requirements established pursuant to the CWA and applicable State statutes and regulations. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136.

When establishing NPDES permit requirements, EPA is required to consider, and include limitations in the permit, based on the most stringent of the following concepts: (a) technology-based requirements, (b) water quality-based requirements, (c) anti-backsliding from the limitations and requirements in the current/existing permit, and (d) antidegradation requirements.

Technology-based requirements represent the minimum level of control that must be imposed under Sections 402 and 301 (b) of the CWA and implementing regulations at 40 CFR 125, 133,

and 405 through 471. For publicly-owned treatment works (POTWs), technology-based requirements are effluent limitations based on secondary treatment requirements of Section 301(b)(1)(B) of the CWA as defined in 40 CFR 133.102. In situations where promulgated technology-based requirements are not applicable, Section 402(a)(1)(B) of the CWA provides that such limits be based on EPA's judgment. Such limits are referred to as "best professional judgment" (BPJ) limits, and are referenced in 40 CFR 125.3.

Water quality-based requirements are necessary where effluent limits more stringent than technology-based limits are necessary to maintain or achieve federal or state water quality standards. Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on federal or state water quality standards. The Massachusetts Surface Water Quality Standards (314 CMR 4.00) contain requirements for conventional and toxic pollutants in order to provide protection for designated uses in the receiving waters. Included in these Standards are provisions that EPA criteria for toxic pollutants, established pursuant to Section 304 (a) of the CWA, shall be used unless site-specific criteria are established. 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.

Anti-backsliding as defined in Section 402(o) of the CWA and implementing regulations at 40 CFR §122.44(l) require 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.

In accordance with regulations found at 40 CFR Section 131.12, each state must adopt a statewide antidegradation policy to maintain and protect existing in-stream water quality. The Massachusetts Antidegradation Policy is found at Title 314 CMR 4.04. No lowering of water quality is allowed, except in accordance with the antidegradation policy. This applies in situations where a lowering of water quality is being proposed, such as a new discharge or an increased discharge of pollutants at a facility with an existing permit.

6. Effluent Limitations and Monitoring Requirements in the Permit

Technology-based requirements are promulgated for the Pulp, Paper, and Paperboard Point Source Category at 40 CFR Part 430. The Turners Falls Mill operations fall under Subpart K of that regulation -- Fine and Lightweight Papers from Purchased Pulp Subcategory (Fine Paper Produced from Purchased Pulp -- Cotton Fiber Furnish Subdivision). This regulation includes limitations for BOD₅, TSS, pH, and the toxic pollutants, pentachlorophenol and trichlorophenol, which are often used as biocides in this type of mill. Effluent limitations must be based on that regulation, unless more stringent limitations are necessary to comply with the state water quality standards or antibacksliding from current permit limits. The calculations for treatment technology-based effluent requirements are shown in **Attachment C**.

The state water quality standards are required to be met in the receiving waters. Those standards allow the use of dilution by the receiving waters for certain types of effluent parameters, using the seven-day, once in ten year, drought flow (7Q10). The 7Q10 in the Connecticut River at the

point of discharge is estimated to be 1250 cubic feet per second (cfs). The calculations for water quality-based effluent requirements are shown in **Attachment D**.

Attachment E is a summary of the basis for the draft permit effluent limits for Outfall 001, considering the treatment technology-based requirements, the water quality-based requirements, the previous permit limits (anti-backsliding), antidegradation, and the discharge monitoring results under the previous permit. Outfall 002 only contains pass-through of power generation water and seasonal non-contact cooling water, along with a small amount of occasional storm water runoff which is regulated under another permit, so detailed analysis of the various types of effluent limits is not needed. The following additional information provides an explanation of the draft permit effluent limits.

a. Outfall 001 -- The rationale for the permit limits is as follows for Outfall 001, which contains the treated process wastewater:

Flow -- Reporting (no limits) is required.

BOD₅ and TSS -- Limitations were calculated from the promulgated standards in 40 CFR 430, using the production rate applied for via the permit application. These limits were compared with limits in the current permit. The limits from the current permit (BOD₅ daily maximum = 1,104 lb/day, BOD₅ monthly average = 577 lb/day, TSS daily maximum = 1,000 lb/day, and TSS monthly average = 500 lb/day) are somewhat more stringent and are therefore carried forward into the new permit under the antibacksliding requirement. In some cases high BOD₅ loading to receiving waters can depress in-stream dissolved oxygen levels. However, because of the large 7Q10 at the point of discharge, and the high and immediate amount of mixing due to the diffuser on Outfall 001, EPA believes that water quality-based limits for BOD₅ would be less stringent than the current permit limits. Also, there are no reported water quality impairments in the receiving water due to low dissolved oxygen.

pH -- The proposed limits are carried forward from the current permit and are based on attaining state water quality standards. However, the proposed monitoring frequency is reduced from 1/day to 1/week. As indicated in Attachment A, discharges from Outfall 001 have been in compliance with the current pH limits. The pH standard contained in 40 CFR 430 is less stringent.

Total Nitrogen and Total Phosphorus -- Quarterly reporting (no limit) is required in order to obtain information as to the amount of these nutrients being added to the watershed. This information, when combined with nutrient information from other sources, will help determine total nutrient loadings to the watershed, and possible corrective measures where nutrient enrichment is a problem under the state water quality standards. If such corrective measures are needed, a permit modification would be required.

Specifically for Total Nitrogen, water quality modeling has demonstrated that excessive nitrogen loadings are causing significant water quality problems in Long Island Sound, including dissolved oxygen. The State of Connecticut has begun to impose nitrogen limitations on

Connecticut discharges to Long Island Sound and its tributaries. EPA agrees there is a need to determine the loadings of nitrogen from sources in Massachusetts which are tributary to Long Island Sound, and to help determine what limits, if any should be imposed on discharges in Massachusetts. Therefore, based on Section 308 of the Clean Water Act, the quarterly requirement for total nitrogen testing is included in the draft permit.

Acute Toxicity and Chronic Toxicity – The proposed acute toxicity limit, $LC_{50} \geq 50\%$, is carried forward from the current permit. This limit is included to provide assurance that there is no unacceptable toxicity in the discharge. A review of past acute toxicity test results reported between March 2003 and September 2006 (see Attachment A) indicates that 3 of the 12 tests conducted for this discharge failed to meet the 50% limit. Given the very large dilution available in the receiving water, toxic impacts beyond the outfall are likely to be very localized and minimal. However, EPA will continue to monitor the results of future toxicity tests and should the trend of occasional toxicity exceedences continue, EPA may require the permittee to perform a Toxicity Identification Evaluation (TIE) and a Toxicity Reduction Evaluation (TRE).

The draft permit proposes to eliminate the chronic toxicity testing monitoring requirement in the current permit of 3/year because of the very large dilution available in the receiving water (dilution factor of 1153, see Attachment D). A review of past chronic toxicity test results indicates that the discharge from Outfall 001 has no reasonable potential to cause or contribute to excursions of aquatic life standards due to chronic toxicity in the receiving water.

Temperature -- The draft permit proposes to eliminate the temperature monitoring requirement for Outfall 001. The permittee requested EPA to reconsider the in-stream temperature monitoring requirements in the current permit associated with Outfall 001 because of the large available dilution of the receiving water and because of difficulties in conducting temperature monitoring in the power canal. EPA has re-evaluated the potential thermal impacts for Outfall 001 and has concluded that any increases in river temperature resulting from the discharge at Outfall 001 would be very minimal and at most times indiscernible. For example, the calculated increase in river temperature downstream of Outfall 001 for a discharge temperature of 20 degrees F above the river temperature during 7Q10 flow conditions (1250 cfs) would be approximately 0.017 degrees F. This calculation assumes zero heat loss to the atmosphere which results in a conservative overestimate of the calculated temperature rise caused by the discharge. Also, temperature data collected by the permittee in the Power Canal upstream and downstream from Outfall 001 during June and July 2006 showed no difference between upstream and downstream temperatures for all monitoring events. Therefore, EPA believes there is no reasonable potential to violate Massachusetts' water quality standards for temperature.

b. Outfall 002 -- The rationale for the permit limitations is as follows for Outfall 002, which contains power generation water (pass-through from the Power Canal) and non-contact cooling water: (Please note that storm water, which is also discharged from Outfall 002, is regulated under the EPA's Multi-Sector General Permit. Therefore, it is not covered in the proposed draft or current permit.)

Flow -- Reporting (no limits) is required.

pH -- The proposed limits are carried forward from the current permit and are based on attaining state water quality standards. However, the proposed monitoring frequency is reduced from 1/day to 1/week. As indicated in Attachment A, discharges from Outfall 002 have been in compliance with the current pH limits.

Temperature -- The proposed limit of 83 degrees F, as a daily maximum, is carried forward from the current permit. This limit is based on the state water quality standards. However, the proposed monitoring frequency is reduced from 1/day to 1/week. During the period from June 2003 to September 2006 there have been no exceedences of the limit.

c. Other Effluent Requirements -- In addition to these specific effluent limitations, there are several narrative effluent requirements which contain general limitations to comply with state water quality standards on such things as color, oil sheen, foam, floating or settleable solids, and non-specific toxic chemicals. A prohibition on the use of trichlorophenol and pentachlorophenols is contained in the narrative requirements. Also, other general monitoring conditions are contained in the narrative requirements.

7. Cooling Water Intake Structure Requirements

The basis for cooling water intake structure (CWIS) requirements is found in the Clean Water Act (CWA) in Section 316(b), 33 U.S.C. Section 1326(b). Section 316(b) governs requirements related to cooling water intake structures 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. CWA § 316(b) applies if the permit applicant seeks to withdraw cooling water from a water of the United States. CWA § 316(b) applies to this permit due to the presence and operation of a cooling water intake structure at the Southworth facility.

In the absence of applicable regulations, for many years EPA has made Section 316(b) determinations on a case-by-case basis based on best professional judgment (BPJ), for both new and existing facilities with regulated CWISs. Although EPA has promulgated Section 316(b) regulations for certain new and existing power plants, for new non-power plant facilities with a capacity of more than 2 million gallons per day (mgd), and for new offshore oil and gas extraction facilities, the Southworth facility is not a power plant, it is not an oil or gas extraction facility, it is not new, and the maximum NCCW intake at the Southworth Company facility is 0.4 mgd. Consequently, no EPA regulations promulgated under Section 316(b) are applicable to the Southworth facility. In the absence of applicable compliance standards, Section 316(b) permit requirements for smaller, existing facilities with CWISs, such as the Southworth facility, continue to be established on a best professional judgment (BPJ) basis.

State legal requirements, including state water quality standards, also may apply to the development of permit conditions for cooling water intake structures. State water quality standards set designated uses for water bodies within the State and specify narrative and numeric criteria that the water bodies must satisfy. The limits in EPA-issued NPDES permits that address cooling water intake structures must satisfy both CWA §316(b) and any applicable State requirements, such as appropriate water quality standards [See CWA §§ 301(b)(1)(C), 401(a)(1) and (d), and 510; 40 CFR §§ 122.4(d), 122.44(d), 125.84(e), and 125.94(e)]. The Massachusetts Department of Environmental Protection (MassDEP) has primary responsibility for determining what permit limits are necessary to achieve compliance with State law requirements. Since the NPDES permit that EPA expects to issue to Southworth Company will be subject to State certification under CWA §401, the permit will also need to satisfy any MassDEP conditions of such a certification (See also 40 CFR §§ 124.53 and 124.55). EPA anticipates that the MassDEP will provide this certification before the issuance of the final permit.

Again, Section 316(b) of the CWA addresses the adverse environmental impact of CWISs at facilities requiring NPDES permits. EPA has assessed the four factors set forth in Section 316(b), i.e., location, design, construction, and capacity of the CWIS at this facility. Information used in this assessment includes the following: the application for re-issuance of the permit; additional communication from Mr. Jeffrey Poirier, Technical Services Supervisor for Southworth, dated December 18, 2006; information gathered during an EPA and MassDEP facility visit in November, 2006; and information gathered from the United States Geological Survey's Silvio O. Conte Anadromous Fish Research Laboratory in Turner's Falls.

EPA has concluded, based on its BPJ, that the CWIS at the Southworth Company, Turners Falls Mill, reflects the best technology available (BTA) for minimizing adverse environmental impact. The rationale for this conclusion is as follows:

Location: The location of the CWIS for the Southworth Company facility, on the Power Canal parallel to the Connecticut River main stem, is judged to be a factor that affects the potential for impingement and entrainment at the facility. The Power Canal was constructed to transport water from the upstream diversion dam on the Connecticut River to the downstream power generation dam, through which the water re-enters the Connecticut River. According to the Company, the Power Canal in the proximity of the CWIS is 120 feet wide by 30 feet deep. The minimum flow in the Power Canal is 1400 cfs, the maximum flow is 15,000 cfs, and the average flow is 11,000 cfs. From these flows and dimensions, the Southworth Company has estimated the average velocity of the canal flow as it passes the CWIS to be 183 ft/min, with a minimum velocity of 23 ft/min and a maximum velocity of 250 ft/min. According to the Southworth Company, the minimum velocity is rarely seen. These flows and velocities are continuous except during canal draw-downs.

During a visit by EPA and MassDEP staff, it appeared that the relatively smooth concrete walls of the Power Canal, coupled with the high flow rate in the Canal, produce very rapid and streamlined flow past the CWIS, with few, if any, quiescent pockets or eddies where fish may take refuge. A one-week draw-down of the Power Canal occurs annually, which is coordinated between the Southworth Company and the Northeast Utilities Company to allow Southworth's

annual maintenance shutdown to occur while the Northeast Utilities Company is cleaning the Canal.

Based on information from United States Geological Survey's Silvio O. Conte Anadromous Fish Research Laboratory in Turner's Falls, the Power Canal is a primary route of up-stream and down-stream migration for American shad, Atlantic salmon, and other migratory fishes using the Connecticut River. Provisions for fish migration into and out of the canal have been made at both the upstream and downstream ends of the canal. As such, there are anadromous fish (e.g. shad), catadromous fish (e.g. eel), and resident species of fish expected to occur in the vicinity of the CWIS. Because of the smooth-walled design and high water velocities in the upper reach of the Power Canal where the CWIS is located, the upper reach is relatively poor habitat for fish. It is unlikely that any significant spawning or nursery areas exist in the upper reach of the Power Canal, although some spawning and feeding habitat of resident species exists in the lower ponded reach of the canal, downstream of the Southworth facility. (Information in this paragraph supplied by e-mail communication of March 15, 2007, from staff at the US Geological Survey's Silvio O. Conte Anadromous Fish Research Laboratory, which is located along the Power Canal at Turners Falls.)

Capacity: The "capacity" of the CWIS refers to the volume of cooling water that it withdraws. Generally, reductions in the CWIS flow proportionally reduce entrainment and also reduce impingement. Cooling water use at the Southworth Company facility is intermittent and ranges from 0.04 to 0.4 mgd (0.062 to 0.62 cfs). This represents from 0.0006% to 0.006% of the average flow of the Power Canal. This is a subset of the flow withdrawn from the Canal when the facility's water wheel is operating to generate power. The water wheel hydroelectric generator at the Southworth Company facility is put into operation only during times of maximum velocity in the Power Canal. As indicated in the permittee's application, the maximum water withdrawal for power generation is 3.8 mgd (5.88 cfs), or 0.05% of the average flow in the Power Canal. Water which passes through the water wheel and the used cooling water are discharged to the Connecticut River through Outfall 002.

During times (typically in the summer) when the water wheel is not operating and cooling water is needed, the sluice gate at the Power Canal is partially opened to fill the flume to allow the facility to draw non-contact cooling water only. The flume fills completely and pressurizes. In this situation, the flume acts as a reservoir for the facility to draw its cooling water from, but there is also some leakage by the "wickers" on the water wheel. This withdrawal flow, while difficult to accurately estimate as a maximum percentage of intake water used for cooling water, is substantially less than the maximum flow of 3.8 mgd. Based on this currently available information on the intake and canal flows, EPA has determined that the relatively small capacity of the CWIS represents a significant BTA factor which minimizes harm due to entrainment, since the proportion of eggs, larvae and juvenile fish entrained from a population is roughly proportional to the percentage of total water volume (i.e., habitat) passing through the Power Canal that is pumped through the cooling system. EPA has also determined that the relatively low flow capacity of the CWIS also represents a BTA factor which minimizes harm due to impingement.

Design and Construction: Water used for non-contact cooling, papermaking process needs, and in-plant power generation is withdrawn from the Power Canal through the CWIS. The CWIS includes a bar rack along the bank of the Power Canal. The bar rack covers both a 12" diameter pipe that withdraws water for the papermaking process (following sand filtration) and a sluice gate. The sluice gate withdraws canal water for a water wheel used for power generation and for non-contact cooling water used in the facility's chillers for air conditioning in the summer. According to the Southworth Company, the width of the gaps in the bar rack is on average $\frac{3}{4}$ of an inch on center, and the thickness of each bar is $\frac{1}{4}$ of an inch. The bar rack continuously covers these intakes. Water that is withdrawn for the papermaking process is carried by gravity through the 12" pipe to the sand filters for treatment. There is a screening basket in the piping which feeds the pump for the chiller's non-contact cooling water.

In the case of the design of the CWIS at the Southworth Company facility, organisms entering the CWIS through the bar rack on the Power Canal will likely be carried to one of three places: (1) into the gravity-fed system to the water wheel, (2) through the screening basket in the piping which feeds the pump for the chiller's non-contact cooling water, or (3) to the sand filter which treats process water. Therefore, should any fish enter the CWIS, physical stresses and mortality will likely be the predominant impacts of the CWIS at the Southworth Company facility.

At EPA's request, the Company has undertaken an assessment of the potential for fish being drawn into the facility's intake water and/or for fish impingement on the various components of the CWIS. During the annual shutdown in the fall of 2006, the Company inspected the power wheel flume for fish. At that time, and in the past, the Company stated that facility personnel have never encountered any evidence of fish being captured in this intake. This includes the screening basket in the piping which feeds the pump for the chiller's non-contact cooling water, where the Company stated it has seen no evidence of fish during periodic cleaning. Although the sand filters are not associated with the cooling water, if fish were getting into the intake water from the Power Canal, the Company indicated that the most likely place for them to be seen would be in the settling tank or sand filters. The water in the sand filters is approximately 1 ft. deep and visible from the top of the sand beds. The facility backflushes these filters every 2 to 3 hours. The Company stated that if any fish were in the system, they would be easily observed. In summary, the Company stated that no fish have been seen here or at any other place in the intake system.

EPA is not aware of any other environmental studies that directly document impingement at the Southworth Company facility. Therefore, in assessing the impact of impingement and/or entrainment at the Southworth Company facility for this permit, informal observations by the facility personnel described above, indirect evidence that there are no significant impingement and/or entrainment losses due to facility operations, and the CWIS characteristics are being used to determine BTA permit conditions. In this site-specific case, enough information is available for EPA to make a BTA determination under CWA § 316(b). However, continued and expanded regular monitoring for fish impingement is included in the Draft Permit to confirm this evaluation. No formalized impingement monitoring program has ever been implemented by the facility. Therefore, EPA is requiring, as a provision of this Permit, that the permittee initiate a regular monitoring and record keeping program to identify any observed fish or impingement at

locations of potential impingement. Since the sand filters are more assessable than locations of potential impingement in the cooling water system, the monitoring requirement includes regular monitoring of the sand filters and backwash. The results of this monitoring shall be submitted annually. The data collected will provide useful information for further impingement evaluation and BTA determinations. The results of this monitoring will be considered by EPA and could lead to permit modifications and/or changes in future permits.

Components of BTA for the CWIS: In making this §316(b) determination, EPA considered the adverse environmental effects from operation of the facility's CWIS and technology options for minimizing these adverse effects by altering the CWIS location, design, construction, and capacity. This site-specific determination of BTA for the Southworth Company facility is based on BPJ. The location of the CWIS is a component of BTA which minimizes adverse effects, due primarily to the fast moving and hydraulically smooth nature of the Power Canal, which limits the habitat for eggs, larvae, and juvenile fish. The design and construction of the CWIS is a component of BTA which minimizes impingement of fish. This is because of the bar rack openings of 1/2 inch (which most likely excludes many adult and juvenile fish), the position of the bar rack parallel to the flow of the Power Canal which allows flow in the Power Canal to easily sweep past the bar rack. The capacity of the CWIS is also a component of BTA which minimizes entrainment and impingement of adult fish because of relatively low and intermittent intake flows.

In addition to maintaining the current CWIS location, design, construction, and capacity, the permittee shall ensure that the following BTA related and non-BTA requirements are implemented:

1. The permittee shall implement a *CWIS Monitoring Program* to determine the number of adult and juvenile fish of all species being impinged on or within the CWIS or the sand filters throughout the portions of the year when the CWIS is in use. Locations along the route of intake water where fish are most likely being found shall be included as sampling sites. These sites shall include, but are not limited to, the bar rack, the sand filter beds, the sand filter backwash water, the screening basket in the piping feeding the pump for the chiller's non-contact cooling water, overflows, and any other constriction potentially in the pathway of fish that have entered the CWIS. The frequency of regular observations may be tailored based on the accessibility of these structures. Monitoring of the sand bed filters shall be done preceding backwash events to the extent practicable, to maximize the change of observing any fish in the sand filter or backwash. Monitoring shall be for all fish species. Monitoring logs shall include the following: date; time; time since last backwash event (for sand filters); observer/operator; location; CWIS intake flow on the day of the observation; number of fish; and for each fish observed, the fish length, species, condition (whether the fish was alive when collected), and whether the fish was returned to the river.
2. All live adult and juvenile fish and other aquatic organisms impinged, entrained or trapped on or in the CWIS shall be returned to the river by means designed to maximize their survival.

3. On or before January 30, 2009, and on each anniversary thereafter, the permittee shall submit to EPA the *Annual CWIS Biological Monitoring Report*. This *Annual CWIS Biological Monitoring Report* shall include, with one exception, all the monitoring logs and data collected in the previous calendar year's *CWIS Monitoring Program* described in paragraph 1 above, as well as a summary of the data. The exception is that the first *Annual CWIS Biological Monitoring Report* shall report on results beginning on the effective date of the permit through December 31, 2008. Monitoring and sampling results shall be recorded and summarized for each month. The report shall include the locations that were monitored, the specific monitoring methods used, the monitoring duration during each event, the date and time of sampling, the number of hours since the previous backwash event (for sand filters), the length of any fish observed, and the species of any fish observed. Daily flows for the CWIS on each date monitored, as well as any excursions from the sampling plan or plant operations shall be reported. The *Annual CWIS Biological Monitoring Report* shall also describe the measures taken to ensure that those involved in planning and conducting the sampling have the necessary knowledge and ability to ensure sampling accuracy and effectiveness, including the ability to identify all fish found in this area to the species level. At each sampling location, the following data shall be recorded for each species collected: total number of fish collected; length (in centimeters) of each fish, date collected, and whether the fish was alive when collected. If for a given annual period, no impinged, live or dead fish were observed, no *Annual CWIS Biological Monitoring Report* is required; however, this shall be reported to EPA at each anniversary. Whether or not fish were observed, a summary of all monitoring shall be submitted to EPA within 54 months of the effective date of the permit, along with the facility's permit re-application.

While the above measures and the current location, design, construction, and capacity of the CWIS represent the BTA for the Southworth Company facility based on current and available information, EPA acknowledges that additional information regarding the CWIS and its adverse environmental effects could lead to modification of this BTA determination during the term of this permit in future permits.

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 Marine Fisheries Services (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, may adversely impact any essential fish habitat (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.

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 and are identified on a NMFS website (See <http://www.nero.noaa.gov/hcd/webintro.html>) In some cases, a 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.

The Connecticut River is designated by NMFS as EFH for Atlantic salmon. Atlantic Salmon migrate up the River and its tributaries to spawn. EPA has concluded that the limits and conditions contained in this draft permit minimize adverse effects to EFH for the following reasons:

The discharges are small in relation to the large flow in the Connecticut River. The permit contains requirements to comply with all state water quality standards for protection of fish and fish habitat.

A special condition is being placed in the permit for the first time to ensure that the cooling water intake structure uses best available treatment for minimizing entrainment and impingement of fish, fish larvae, and fish eggs, as discussed above in Item 7. In summary, the permit is designed to minimize adverse effects on fish and fish habitat.

EPA believes that the draft permit limits and requirements adequately protect the EFH, and therefore additional mitigation is not warranted. If adverse impacts to EFH are detected as a result of this permit action, or if new information is received that changes the basis for our conclusion, NMFS will be notified and an EFH consultation will be reinitiated.

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, where as the National Marine Fisheries Service (NMFS) administers Section 7 consultations for marine species and anadromous fish.

As the federal agency charged with authorizing the discharges from this facility, EPA has reviewed available habitat information developed by the Services to see if one or more of the federal endangered or threatened species of fish, wildlife, or plants may be present within the influence of the discharge. Federally listed endangered species that may be in the vicinity of the discharges are the shortnose sturgeon (*Acipenser brevirostrum*) and the dwarf wedge mussel (*Alasmidonta heterodon*). Currently, NMFS has authority over the shortnose sturgeon under

Section 4(a)(2) of the ESA, 16 U.S.C. Section 1533 (a)(2), while the USFWS has authority over the dwarf wedge mussel.

EPA believes the authorized discharge from this facility is not likely to adversely affect any federally-listed species or their habitats. This preliminary determination is based on the location of the outfall, and the reasons provided in the EFH discussion (Section 8 of this Fact Sheet). EPA is seeking concurrence with this opinion from NMFS and USFWS through the informal consultation process.

10. 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 Water Quality Standards. The staff of the Massachusetts Department of Environmental Protection (MassDEP) has reviewed the draft permit. EPA has requested permit certification by the State pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

11. 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 Mark Voorhees, U.S. EPA, Office of Ecosystem Protection, 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.

12. EPA and State 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:

Mark Voorhees
Office of Ecosystem Protection
U.S.E.P.A. - Region 1
One Congress Street, Suite 1100 (CIP)
Boston, MA 02114-2023
Tel: (617) 918-1537
email: voorhees.mark@epa.gov

Paul M. Hogan
MassDEP
Division of Watershed Management
627 Main Street
Worcester, MA 01608
Tel: (508) 767-2796
email: paul.hogan@state.ma.us

Date: _____

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

SOUTHWORTH CO TURNERS FALLS MI
NPDES Permit MA0005011
DMR Summary

Pipe 1: Treated Effluent

Date	# Meas./ Month	TEMP, WATER DEG. F (UP AND DNSTRM)		BOD, 5-DAY (20 DEG. C)		pH		SOLIDS, TOTAL SUSPENDED		FLOW		LC50 STAT 48HR ACU CERIO	NOEL STATRE 7DAY CHR CERIO
		Average	Max	Average	Max	Min	Max	Average	Max	Average	Max	Min	Min
30-Apr-06				496	1069	6.7	8.2	121	414	0.69	0.83		
31-Mar-06				204	389	6.8	8.2	65	228	0.7	0.8	>100	12.5
28-Feb-06				210	368	6.5	8.2	90	325	0.68	0.81		
31-Jan-06				295	834	6.5	8.2	68	370	0.75	1.04		
31-Dec-05				320	461	6.5	7.8	78	254	0.69	0.86		
30-Nov-05				163	410	6.1	8.2	50	86	0.67	0.78		
31-Oct-05				121	244	6.1	8.2	57	124	0.66	0.87		
30-Sep-05		214	404	214	404	6.1	8.2	73	147	0.68	0.77	>100	12.5
31-Aug-05				219	442	6.2	8.2	47	116	0.66	0.79		
31-Jul-05				177	261	6.3	8.2	86	250	0.68	0.97		
30-Jun-05				244	461	6.3	8.1	87	302	0.68	0.84	>100	100
31-May-05				189	292	6.6	8.2	117	230	0.71	0.89		
30-Apr-05				218	568	6.6	8.2	109	572	0.68	0.85		
31-Mar-05				208	402	6.7	8.1	65	144	0.66	0.81	>100	100
28-Feb-05				181	311	6.9	8.1	114	608	0.67	0.79		
31-Jan-05				172	353	7	7.9	127	571	0.68	0.89		
31-Dec-04				212	450	6.8	8	146	262	0.71	0.88		
30-Nov-04				257	549	6.9	8.2	57	188	0.65	0.85		
31-Oct-04				148	223	6.3	8.1	65	140	0.68	0.92		
30-Sep-04				230	455	6.4	8.2	55	155	0.71	0.82	>100	50
31-Aug-04				155	296	6.5	8.2	66	226	0.62	0.77		
31-Jul-04				290	415	6.1	8.2	41	73	0.56	0.67		
30-Jun-04				157	317	6.7	8.1	77	659	0.63	0.78	35.4	6.25
31-May-04				142	261	6.2	8.2	63	193	0.65	0.79		
30-Apr-04				429	947	6.4	8	87	201	0.63	0.84		
31-Mar-04				241	789	6.3	8.2	50	131	0.6	0.85	50	6.25
29-Feb-04				168	418	6.6	8.2	79	227	0.71	0.93		
31-Jan-04				155	399	6.6	8.2	65	273	0.64	0.76		
31-Dec-03				93	229	6.8	8.2	33	100	0.58	0.76		
30-Nov-03				214	358	6.7	8	41	94	0.66	0.8		
31-Oct-03				188	306	6.6	8.1	47	181	0.7	0.94		
30-Sep-03				190	624	6.4	8.1	47	163	0.71	0.99	70.7	25
31-Aug-03				157	447	6.4	8.2	71	436	0.7	0.98		
31-Jul-03				91	111	6.4	8.1	49	99	0.78	0.91		
30-Jun-03				169	338	6.6	8	54	117	0.74	0.96	50	6.25
31-May-03				142	262	6.4	8.1	52	119	0.66	0.96		
30-Apr-03				230	908	6.6	8	65	238	0.69	1.1		
31-Mar-03				168	280	6.9	8.1	43	108	0.65	0.91	32.4	6.25

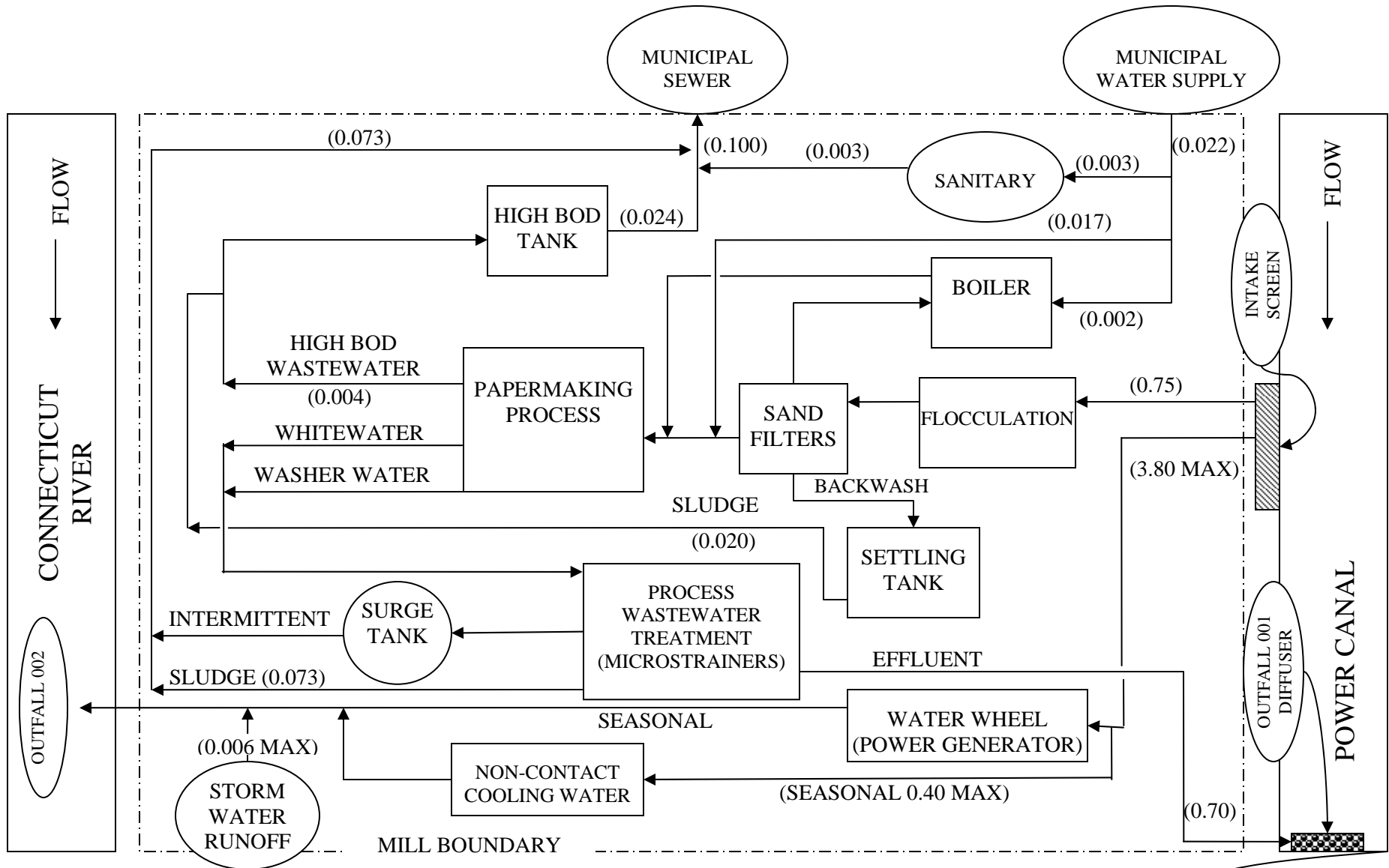
28-Feb-03				529	1169	6.8	8	53	105	0.73	0.99		
31-Jan-03				270	611	6.5	8.1	58	147	0.73	0.97		
Min		-	-	-	-	6.1	-	-	-	-	-	32.4	6.25
Average		214	-	216.4	-	-	-	70.45	-	0.6765	-	-	-
Max		-	404	-	1169	-	8.2	-	659	-	1.1	-	-

Pipe 2: NCCW

Date	# Meas./ Month	TEMP, WATER Max	pH		FLOW Average
			Min	Max	
30-Sep-05		81	7	7.5	0.432
31-Aug-05		83	7	7.5	0.432
31-Jul-05		83	6.9	7.4	0.432
30-Jun-05		79	6.3	7.2	0.432
30-Sep-04		75.7	7.18	7.43	0.432
31-Aug-04		80.1	7.26	7.51	0.432
31-Jul-04		80.4	7.3	7.6	0.432
30-Sep-03		73.4	7.2	7.5	0.432
31-Aug-03		79.5	7	7.5	0.432
31-Jul-03		80.8	7.15	7.41	0.432
30-Jun-03		80.6	7.05	7.2	0.432
Min		-	6.3	-	-
Average		-	-	-	0.4
Max		83.0	-	7.6	-

ATTACHMENT B

PROCESS DIAGRAM – SOUTHWORTH COMPANY, TURNERS FALLS, MA



Notes:

1. Flows are shown in parentheses with units of million gallons per day (mgd).
2. Flows are approximations for illustration only. Actual flows vary somewhat from day to day.

TURNERS FALLS RD

ATTACHMENT C

TREATMENT TECHNOLOGY-BASED EFFLUENT REQUIREMENTS

Federal Category: Fine paper from purchased pulp - cotton fiber furnish

Clean Water Act Reference: Sections 301, 304, 307, and 402

Code of Federal Regulations Reference: 40 CFR 430, Subpart K

Pollutants/Parameters: BOD₅, TSS, pH, Pentachlorophenol, and Trichlorophenol

Production Rate: 32 tons/day

Calculations and Comments:

- 32 tons/day = $\underline{64}$ x (1,000 lb/day)
- Determining BPT and BCT
Using the fine paper, cotton fiber furnish subdivision of § 430.112 (and 113):
 - BOD₅, daily maximum = (17.4) (64) = 1,114 lb/day
 - BOD₅, monthly average = (9.1) (64) = 582 lb/day
 - TSS, daily maximum = (24.3) (64) = 1,555 lb/day
 - TSS, monthly average = (13.1) (64) = 838 lb/day
 - pH = within the range 5.0 to 9.0 at all times
- Determining BAT
Using the fine paper, cotton fiber furnish subdivision of § 430.114:
Limits apply for pentachlorophenol and trichlorophenol, if chlorophenolic-containing biocides are used. These chemicals are not now used at the Southworth Facility, and the draft permit prohibits their future use.

ATTACHMENT D

WATER QUALITY-BASED EFFLUENT REQUIREMENTS

Pollutants/Parameters: BOD₅, TSS, pH, Total N, and Total P

State Water Quality Standards References: 314 CMR 4.00 (for Class B, Warm Water: Section 4.05 (3)(b))

Drought Flow at the Point of Discharge (7Q10): 1250 CFS

Discharge Flows: Outfall 001 (Process Wastewater) = 0.7 MGD

Calculations and Comments:

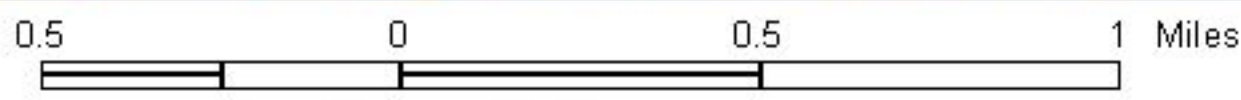
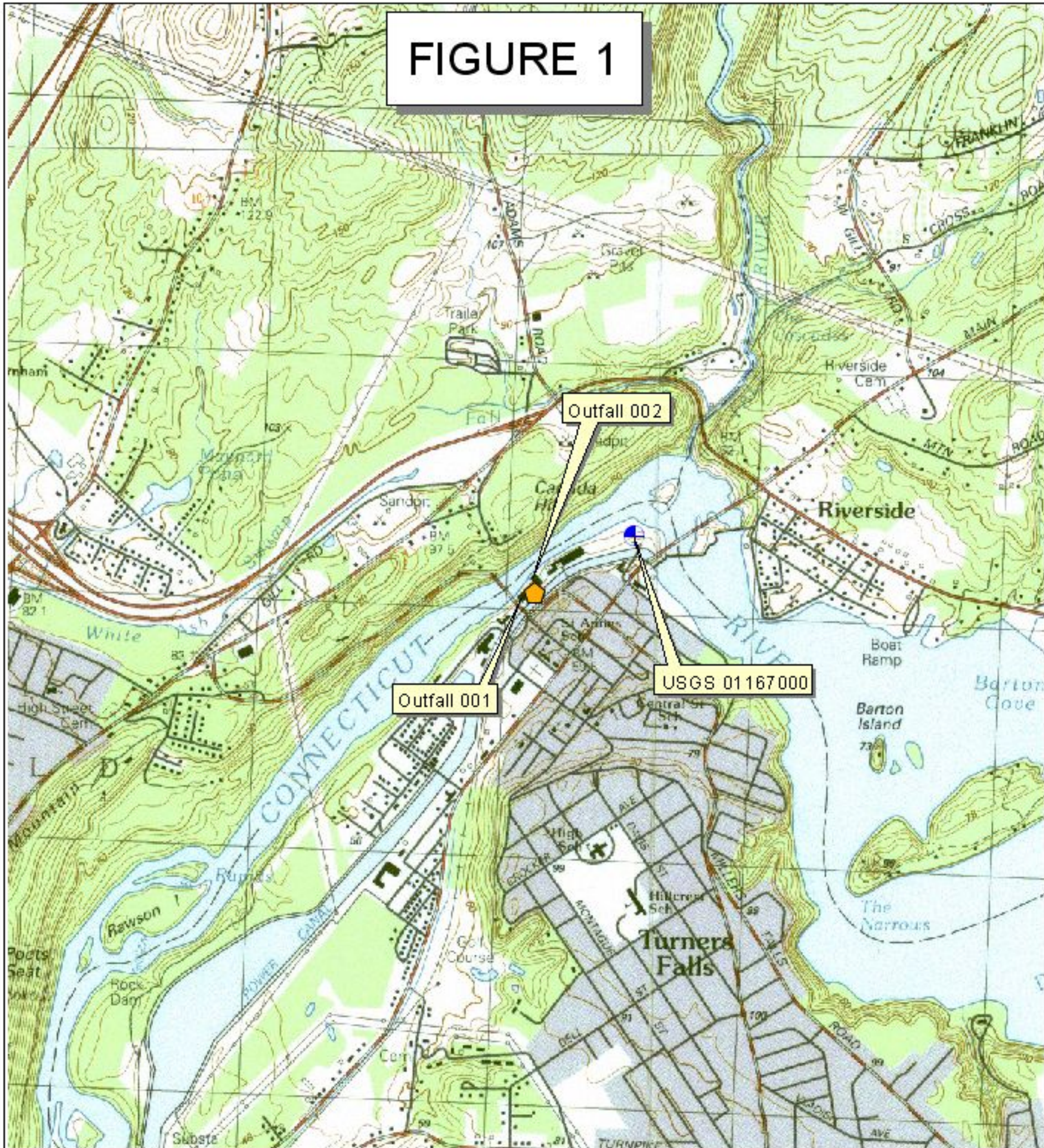
- Discharge Flow in CFS = (0.7) (1.55) = 1.085
- $R = \text{Dilution Ratio} = \frac{Q_R + Q_E}{Q_E} = \frac{1250 + 1.085}{1.085} = \frac{1251}{1.085} = 1153$
- **BOD₅ and TSS:** No assimilative capacity studies exist for these conventional pollutants. However, because of the large 7Q10 at the point of discharge, and the high and immediate amount of mixing due to the diffuser on Outfall 001, EPA believes that water quality-based limits for BOD₅ would be less stringent than the current permit limits. Also, there are no reported water quality impairments in the receiving water due to low dissolved oxygen.
- **pH:** The water quality standard range is 6.5-8.3, and not more than 0.5 units outside the background range. Because of the extremely large dilution ratio at drought flow, and the rapid mixing of the discharge with the receiving water, the current permit range of 6.0-8.3 can be allowed in order to accommodate process operational variability without endangering water quality (no reasonable potential to violate water quality standards).
- **Total N:** In order to determine nutrient inputs to the Connecticut River Watershed, reporting of total nitrogen is needed. At this time there is not enough information available to determine if a limit is needed.
- **Total P:** The Massachusetts target maximum total phosphorus concentration in flowing streams is 0.1 mg/l, based on EPA nutrient criteria. Using that concentration, (0.1)(R) = 116 mg/l in the Southworth discharge, assuming zero phosphorus in the upstream receiving water. This is much higher than will occur, so there is no reasonable potential for phosphorus nutrient problems from this discharge. However, as with nitrogen, reporting of total phosphorus will help determine total nutrient inputs to the Connecticut River Watershed.

ATTACHMENT E

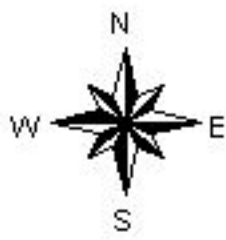
BASIS FOR DRAFT PERMIT EFFLUENT LIMITS

<u>Pollutant</u>	<u>How Measured</u>	<u>Units</u>	<u>Treatment-Based Limits</u>	<u>Water Quality-Based Limits</u>	<u>Anti-Backsliding Limits</u>	<u>Antidegradation Limits</u>	<u>DMR Results Avg / Max</u>	<u>Draft Permit Limits</u>
BOD ₅	daily max	lb/day	1,114	N/A	1,104	N/A	476/1,169	1,104
BOD ₅	30 day avg	lb/day	582	N/A	577	N/A	222/529	577
TSS	daily max	lb/day	1,555	N/A	1,000	N/A	228/659	1,000
TSS	30 day avg	lb/day	838	N/A	500	N/A	71/146	500
pH	--	std units	5.0-9.0	6.0-8.3	6.0-8.3	N/A	6.1 min/8.2 max	6.0-8.3
Total N	daily max	mg/l	N/A	Report	N/A	N/A	N/A	Report
Total P	daily max	mg/l	N/A	116	N/A	N/A	N/A	Report
Acute WET	--	%	N/A	≥50	≥50	N/A	50/13.8 min	≥50
Chronic WET	--	%	N/A	≥0.086	Report	N/A	32/6.25 min	

FIGURE 1



**Southworth Company
Turners Falls Mill
Turners Falls, MA
MA0005011**



Data from Mass GIS & MA DEP.
All Data Subject to Revision

For Intra-Agency Policy Deliberations

4/11/07, Massachusetts DEP