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: MA0110043

PUBLIC NOTICE START AND END DATES: July 25, 2007 – August 23, 2007

NAME AND MAILING ADDRESS OF APPLICANT:

Dr. Kenneth R. Simmons, Chief of Hatcheries
Division of Fisheries and Wildlife
Commonwealth of Massachusetts
One Rabbit Hill Road
Westborough, MA 01581

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Charles L. McLaughlin State Trout Hatchery
90 East Street
Belchertown, MA 01007

RECEIVING WATER: Swift River (Chicopee River Basin, MA-36)

RECEIVING WATER CLASSIFICATION: Massachusetts Class B (Cold Water)

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ATTACHMENTS

A. DMR Summary
Figure 1. Map of the Facility, including outfall location

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 fish culture water into the designated receiving water. The previous permit was issued on December 21, 2001 and expired on December 20, 2005. EPA received the application for permit re-issuance on June 15, 2005. Since the application for permit re-issuance was considered timely and complete by EPA, the previous permit has been administratively continued until EPA takes action on the re-issuance.

2. Type of Facility

The facility is a large fish hatchery, producing brook trout, brown trout and rainbow trout. The water source is from the Swift River and gravel packed wells. The facility includes an indoor hatch house for hatching fish eggs. The hatchery has 20 outdoor concrete raceways with 10 pools in each raceway series where the fish are raised, after they reach fingerling size. Every other pool has a quiescent zone at the end. Annual production is approximately 241,000 pounds of fish, comprised of 225,000 pounds of rainbow trout, 10,000 pounds of brook trout, and 6,000 pounds of brown trout. In addition, fry are supplied to other state hatcheries which do not operate hatching operations.

3. Discharge Location and Description

The fish culture wastewater, which contains metabolic waste products from the fish, averages 7.0 mgd, with a maximum daily flow of 8.1 mgd. Floating feed is used which does not carry over into the discharge. Most of the solid wastes from the fish are settled and captured in the quiescent zones at the end of the raceway pools. Drain pipes at the bottom of the quiescent zones are opened as necessary, when solids accumulate, to transport the solids to the wastewater treatment system. Any remaining solids are removed by a vacuum pump and transported to the treatment system. The clarified fish culture water passing the quiescent zones is discharged without further treatment to the Swift River about one mile downstream from the Windsor Dam at the outlet from the Quabbin Reservoir. The Swift River is in the Chicopee River Basin, a tributary to the Connecticut River.

The extended aeration, biological treatment system consists of two, one-acre aerated treatment lagoons. The design detention time is 30 days. The treated effluent from the second treatment lagoon is pumped back to be mixed with the clarified fish culture water which is not treated in the lagoons.

The effluent quality reported on Discharge Monitoring Report (DMR) forms is summarized in **Attachment A**. A map of the facility and discharge location is shown in **Figure 1**.

4. Receiving Water Description

The Swift River is designated as a Class B cold 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 Swift River is listed in 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) and on the Proposed 2006 CWA 303(d) List. Both of those listings indicate that it has been evaluated for most of its designated uses. The water quality standards are being attained for all designated uses which were evaluated.

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

There are promulgated standards for technology-based effluent limits at "concentrated aquatic animal production facilities" which produce 100,000 pounds or more of aquatic animals per year (40 CFR 451). This facility's annual production is 241,000 pounds per year, which requires application of those standards. The terms and conditions of this permit are consistent with 40 CFR 451, which requires reporting on usage of fish-treatment drugs and damages to the fish containment system, along with development and implementation of a "best management practices (BMP) plan" for solids control, materials storage, structural maintenance, recordkeeping, and training. Effluent limits are based on a combination of attaining state water quality standards, effluent guidelines, and anti-backsliding from limits in the current permit.

The biocide formalin, which contains approximately 37% of the toxic chemical formaldehyde, is often used at fish hatcheries to control certain fish diseases and parasites. Although it is not planned for use at this facility, the permittee has requested that the permit be structured to allow the use of formalin for fish disease control in emergency situations. This has been done, with certain effluent limits applicable only if formalin is being used.

Sampling for BOD_5, TSS, Ammonia Nitrogen, Total Nitrogen, and Total Phosphorus is

required when cleaning operations are being carried out in order to measure the "worst case" discharge of pollutants.

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 Swift River at the point of discharge is a short distance downstream from the Windsor Dam on the Quabbin Reservoir. Because of the controlled releases from the Dam, the normal 7Q10 statistic is not relevant. Instead, for purposes of calculating effluent limits for the Hatchery, a "drought flow" was based on the water releases from the Dam:

From MassDEP 1998 Water Quality Assessment Report: *"The Swift River begins at the Windsor Dam with flow regulated by the MWRA via a control structure in the Quabbin power plant, and by an overflow spillway to the east of the 'Y-Pool' which forms. From 1 December through 31 May, MDC is required to release 20 MGD out of Quabbin Reservoir to the Swift River. From 1 June through 30 November, the required releases (per order of the US War Department) are dependent on the streamflow of the Connecticut River at the USGS Montague gage. When the flow of the Connecticut River is <4900 cfs, the required release at Quabbin Reservoir is 45 MGD and when the flow is <4650 cfs, the required release at Quabbin Reservoir is 71 MGD. In practice, however, the MDC releases either 20 or 71 MGD from the reservoir or more depending on reservoir operating conditions (Austin 1993)".*

Therefore, the "drought flow" used for water quality based effluent limit calculations in the draft permit is 20 mgd (31 cfs). This flow is used to calculate available dilution for the discharge from the facility. Because the facility withdraws its flow directly from the Swift River and from gravel-packed well in the near vicinity to the River, the drought flow just upstream of the facility is adjusted to reflect the loss of flow that enters the facility. This calculation uses the proposed monthly average flow limit of 7.5 mgd (11.60 cfs) and assumes that water pumped from the gravel-packed wells will deplete flows in the Swift River by an equivalent amount. The upstream dilution flow is:

Adjusted Available dilution flow = 31 cfs – 11.6 cfs = 19.4 cfs

The rationale for the permit requirements is as follows:

Flow – The proposed limitations of 7.5 mgd, as a monthly average, and 8.1 mgd, as a daily maximum, in the draft permit are based on flows requested to be authorized via the permit application. The proposed monthly average flow of 7.5 mgd represents an increase form the current permit monthly average flow limit of 7.0 mgd.
During the period from January 3003 to June 2006 the monthly average flows discharged by the facility slight exceeded the current flow limit of 7.0 mgd on three occasions. However, the proposed increased monthly average flow limit will not affect the pollutant mass loading discharge limitations for BOD and TSS which are be based on the monthly average flow limit from the current permit. These limits are not revised because of anti-

degradation and anti-backsliding provisions.

BOD_5 and TSS -- The proposed concentration limits of 10 mg/l and mass load limits, measured as daily maximum values, are carried forward from the current permit because of anti-degradation and anti-backsliding. Also, the concentration limits of 10 mg/l, measured as daily maximum values, are technology-based, using EPA's BPJ of what can be achieved by well operated fish hatcheries during worst-case situations when cleaning operations are being carried out. The maximum daily loading limits for BOD and TSS of 584 lbs/day, were calculated using the concentration limits and the average monthly flow value (7.0 mgd) from the current permit.

Maximum Daily BOD_5 and TSS = 7.0 mgd x 10 mg/l x 8.3379 (conversion factor)
Maximum Daily BOD_5 and TSS = 584 lbs/day

The proposed quarterly monitoring frequency is carried forward from the current permit. The monitoring will take place directly following cleaning operations and is intended to represent conditions when maximum pollutant loading from the raceways will most likely occur. Therefore, only maximum daily limits are proposed in the draft permit limits for BOD_5 and TSS.

The facility has performed well at complying with the BOD_5 and TSS limits even as flows through the facility have exceeded 7.0 mgd. As indicated in Attachment A, the reported maximum daily BOD_5 and TSS loadings for the period from March 2003 to June 2006 ranged from 64 to 179 lbs/day and 77 to 420 lbs/day, respectively. These values are well below the proposed and existing maximum daily permit limits for BOD_5 and TSS (584 lbs/day). Also, the reporting loading values represent worst-case loading conditions from the facility as the monitoring is conducted directly following cleaning operations when conditions for maximum pollutant release occur at the facility.

Total Ammonia -- The limit for ammonia, 4.2 mg/l is being carried forward from the current permit, based on anti-degradation and anti-backsliding. The proposed limit is based on protecting in-stream dissolved oxygen levels. In receiving waters, the oxidation of ammonia by nitrifying bacteria depletes oxygen concentrations and can impact aquatic life. Ammonia is also a toxicant at elevated concentrations. However, the proposed limit in the draft permit is more stringent than would be needed for protection against toxicity because of the amount of dilution available. Review of the DMR results presented in Attachment A for the period between March 2003 and June 2006 shows that the discharge concentrations have been consistently well below this limit ranging from 0.32 to 0.77 mg/l.

Total Nitrogen -- Quarterly reporting (no limit) is required in order to obtain information as to the amount of this nutrient 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.

Total Phosphorus -- The draft permit proposes to revise the current phosphorus limit of 1.0 mg/l (maximum daily) to a monthly average limit of 0.26 mg/l. The proposed limit is based on achieving 100 ug/l (0.1mg/l) in the Swift River for low-flow "drought"conditions. The in-stream target of 100 ug/l was derived by the State of Massachusetts from federal nutrient criteria designed to avoid excessive nutrient enrichment in flowing streams. The proposed monitoring frequency for total phosphorus is increased to monthly. The phosphorus limit calculation takes into account ambient phosphorus level upstream of the facility. Phosphorus data reviewed from the Quabbin Reservoir show that phosphorus concentrations are typically below the detection limit of 0.005mg/l. For this calculation, half of the detection limit, 0.0025 mg/l, is used as the background phosphorus concentration.

$$C_{discharge} = ((Q_{R\text{-}downstream} \times C_{R\text{-}target}) - (Q_{R\text{-}upstream} \times C_{R\text{-}background})) / Q_{discharge}$$
$$= ((31 \text{ cfs} \times 0.100 \text{ mg/l}) - (19.4 \text{ cfs} \times 0.0025 \text{ mg/l}))/ 11.6 \text{ cfs}$$
$$= 0.26 \text{ mg/l}$$

pH -- The limits, within the range of 6.5 through 8.3 std units, are based on the state water quality standards. Consistent with the standards, provision is made for pH values outside of the 6.5 to 8.3 range if due to natural causes.

Dissolved Oxygen (DO) -- The draft permit includes a limit for DO based on state water quality standards. A minimum concentration of DO is needed for fish and other aquatic life. The facility discharges to Class B waters, cold water fishery, as classified by the Massachusetts Surface Water Quality Standards, and as such it shall have DO levels not less than 6.0 mg/l. The monitoring for dissolved oxygen (DO) shall be conducted during the use of formalin because when present formalin may deplete oxygen in water.

Formaldehyde, Acute Toxicity, and Chronic Toxicity -- These parameters are included to provide assurance that there is no unacceptable toxicity in the discharge during periods when formalin, a toxic chemical used to protect the hatchery fish from diseases, is being used. Toxicity is regulated under the state water quality standards. Based on the available dilution the draft permit proposes the same acute limit LC_{50} of 100% and a revised chronic toxicity limit C-NOEC of 37%. The revised chronic limit is based on the recalculated available dilution for the facility and is more stringent than the limit, 33%, in

the current permit.

C-NOEC = (Q discharge/Q R downstream) x 100
= (11.6 cfs/31 cfs) x 100
= 37%

The proposed formaldehyde limit of 0.74 mg/l is carried forward from the current permit and is based on anti-backsliding and on attaining Massachusetts water quality standards for preventing toxicity in receiving waters. As discussed in more detail in the Fact Sheet for the current permit, MassDEP has reviewed available aquatic life toxicity information pertaining to formaldehyde and determined that a concentration of 0.74 mg/l would protect receiving waters from toxicity.

Other Permit Requirements -- In addition to these specific effluent limitations, the permit contains 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. Also, other general monitoring conditions are contained in the narrative requirements.

Medications and disease control chemicals, other than those already limited and monitored for, are covered by a provision in the permit. This provision contains requirements to prevent improper usage and possible discharge of such substances, which may have toxic properties which could violate state water quality standards.

The permit contains a provision containing detailed requirements for preparing, submitting to EPA, and carrying out "Best Management Practices" to prevent pollution from the fish hatchery. This is a key component of the permit to insure compliance with both technology and water quality requirements.

7. Essential Fish Habitat

Under the 1996 Amendments to the Magnuson-Stevens Fishery Conservation and Management Act, EPA is required to consult with the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) if EPA proposes a permit action that may adversely impact any essential fish habitat (EFH). The Amendments broadly define EFH as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". "Adversely impact" means any impact which reduces the quality and/or quantity of EFH.

EFH is only designated for species for which federal Fisheries Management Plans exist. A NOAA Fisheries website (See http://www.nero.noaa.gov/hcd/webintro.html) contains maps of designated EFH. 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 Swift River is a tributary to the Chicopee River which flows into the Connecticut

River, and therefore is designated by NOAA Fisheries as EFH for Atlantic salmon, which 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:

> This is a re-issuance of an existing permit.
>
> The permit contains requirements to protect the receiving waters from toxic chemicals or medications which might be used in the hatcheries to treat for fish diseases. As in the previous permit, whole effluent toxicity testing and water quality based effluent limitations to avoid toxicity are required if and when formalin is used in the hatchery.
>
> The permit requires development and implementation of best management practices to address issues which are difficult to express as effluent limits, including non-native species, proper operations, and proper use of medications. These factors are designed to be protective of aquatic life, including those with EFH designations.
>
> The permit will prohibit violations of the state water quality standards.

EPA believes that the draft permit limits and requirements adequately protect EFH for the managed species, 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.

8. 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 discharge 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. EPA has concluded that no federally-listed or

proposed, threatened or endangered species or critical habitat, under the jurisdiction of the USFWS or NMFS, are known to occur in the in the receiving waters identified in this permit. EPA is seeking concurrence with this opinion from the Services. A copy of the Draft Permit and Fact Sheet has been provided to both USFWS and NMFS for review and comment.

9. 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.

10. 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.

11. 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)
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Paul M. Hogan
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Date: _____

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

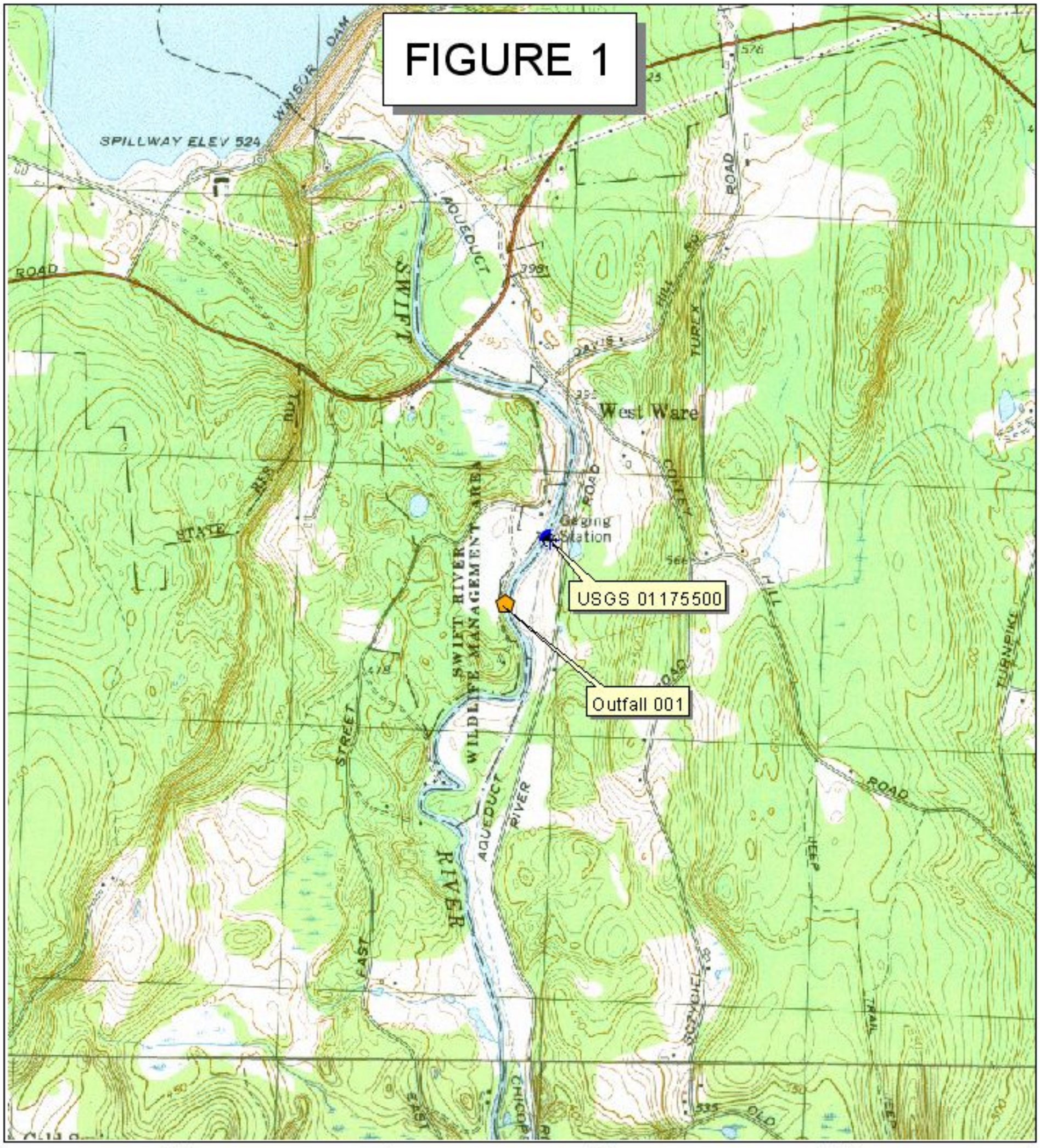
C.L. MCLAUGHLIN TROUT HATCHERY
NPDES Permit MA0110043
DMR Summary

Pipe 1: Fish Waste Discharge

Date	# Meas./ Month	BOD, 5-DAY (20 DEG. C) Min	BOD, 5-DAY (20 DEG. C) Max	SOLIDS, TOTAL SUSPENDED Min	SOLIDS, TOTAL SUSPENDED Max	NITROGEN, AMMONIA TOTAL Min	PHOSPHORUS, TOTAL (AS P) Max	pH Min	pH Max	FLOW Average	FLOW Max
31-Mar-06		3.14	3.26	2.2	2.4	0.69	0.21	6.54	6.66	6.59	6.59
28-Feb-06								6.52	6.61	7.01	7.01
31-Jan-06								6.6	6.68	7.04	7.04
31-Dec-05		2.2	2.26	6.8	6.8	0.67	0.73	6.55	6.61	6.77	6.77
30-Nov-05								6.54	6.64	6.92	6.92
31-Oct-05								6.62	6.69	6.31	6.31
30-Sep-05		2.15	2.24	4.6	6	0.64	0.29	6.61	6.65	5.82	5.82
31-Aug-05								6.63	6.75	6.25	6.25
31-Jul-05								6.64	6.89	5.84	5.84
30-Jun-05		2.36	2.67	2.8	2.8	0.34	0.17	6.62	6.84	6.06	6.06
31-May-05								6.59	6.79	5.93	5.93
30-Apr-05								6.41	6.71	6.58	6.58
31-Mar-05		2.29	2.45	1.8	2	0.32	0.19	6.62	6.84	6.84	6.84
28-Feb-05								6.7	6.79	6.33	6.33
31-Jan-05								6.62	6.81	6.68	6.68
31-Dec-04		2.4	2.6	2.2	2.6	0.65	0.37	6.67	6.74	6.7	6.7
30-Nov-04								6.64	6.69	6.4	6.4
31-Oct-04								6.64	6.71	6.5	6.5
30-Sep-04		2.36	2.39	3	3.2	0.5	0.31	6.52	6.71	6.2	6.2
31-Aug-04								6.64	6.67	6.4	6.4
31-Jul-04								6.58	6.68	5.5	5.5
30-Jun-04		2.88	2.91	4.2	4.4	0.55	0.32	6.65	6.75	4.74	4.74
31-May-04								6.64	6.75	4.89	4.89
30-Apr-04								6.35	6.79	6.21	6.21
31-Mar-04		2.19	2.33	3	3.2	0.71	0.26	6.65	6.86	6.44	6.44
29-Feb-04								6.64	6.69	6.71	6.71

31-Jan-04								6.62	6.67	7.05	7.05
31-Dec-03		2.52	2.9	3.2	3.2	0.66	0.37	6.07	6.83	6.7	7.2
30-Nov-03								6.34	6.65	6.6	7.3
31-Oct-03								6.25	6.55	6.2	7.2
30-Sep-03		2.24	2.25	4.2	4.4	0.52	0.37	6.26	6.35	5.55	5.55
31-Aug-03								6.28	6.42	5.26	5.26
31-Jul-03								6.22	6.73	3.48	3.48
30-Jun-03		2.48	2.68	3.6	4	0.38	0.21	6.38	6.45	3.65	3.65
31-May-03								6.25	6.82	4.85	4.85
30-Apr-03								6.23	6.65	6.5	6.5
31-Mar-03		2.25	2.41	6.6	7.6	0.77	0.47	6.32	6.48	6.66	6.66
28-Feb-03								6.35	6.42	6.63	6.63
31-Jan-03								6.32	6.77	6.67	6.67
Min		2.15	-	1.8	-	0.32	-	6.07	-	-	-
Average		-	-	-	-	-	-	-	-	6.14	-
Max		-	3.26	-	7.6	-	0.73	-	6.89	-	7.3

FIGURE 1



0.5 0 0.5 1 Miles

Charles L. McLaughlin State Trout Hatchery
Belchertown, MA
MA0110043

N
W E
S

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

For Intra-Agency Policy Deliberations

4/11/07, Massachusetts DEP