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: VT0000451

PUBLIC NOTICE START AND END DATES: August 21, 2008 – September 19, 2008

NAME AND MAILING ADDRESS OF APPLICANT:

U.S. Department of the Interior
Fish and Wildlife Service
Pittsford National Fish Hatchery
4 Holden Road
North Chittenden, VT 05763

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Pittsford National Fish Hatchery
4 Holden Road
North Chittenden, VT 05763

RECEIVING WATER: Furnace Brook, Tributary to Lake Champlain

RECEIVING WATER CLASSIFICATION: Vermont Class B (Cold Water)

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1. Proposed Action

On April 9, 2007, the above named applicant applied to the U. S. Environmental Protection Agency (EPA) for issuance of a National Pollutant Discharge Elimination System Permit to discharge fish culture water into the designated receiving water. Discharges from this facility are currently authorized by a wastewater discharge permit (permit No. 3-1188) issued under authority of the State of Vermont. In response to the application, EPA is proposing to issue the permit which is discussed below.

2. Type of Facility

The facility is a fish hatchery, engaged in raising salmonid fish. The hatchery produces 80,000 to 100,000 two-year old Atlantic salmon and 150,000 to 200,000 lake trout annually. The annual production is approximately 45,000 pounds of fish, comprised of 20,000 pounds of Atlantic salmon and 25,000 pounds of lake trout. The hatchery has 40 production raceways measuring 100' by 8', and 16 tanks of 6' inside diameter. All rearing units are flow-through. For 2006, the reported average water flow-through rate is 2.16 mgd, with a maximum daily flow of 2.88 mgd . The water is from three sources: Furnace Brook, wells, and springs. All discharge from the facility is into Furnace Brook, a tributary to Lake Champlain. Fish are released in April and May.

3. Discharge Location and Description

There are four alternate discharge points to Furnace Brook which are used depending on the flow pattern through the hatchery. The wastewater contains the metabolic products from fish production and trace residuals from disease-control chemicals. During the application process with the State of Vermont Agency of Natural Resources, which also issues a discharge permit (Permit No. 3-1188) to this facility, the permittee requested an average monthly flow of 2.6 mgd (4.0 cfs) and a maximum daily flow of 3.0 mgd (4.6 cfs).

A map of the facility and discharge locations is shown in **Figure 1**.

4. Receiving Water Description

Furnace Brook is designated as a Class B, Cold Water Fish Habitat waterbody by the Vermont Water Quality Standards. Class B waters are to be managed to achieve and maintain the following designated uses: aquatic biota, wildlife, and aquatic habitat; aesthetics; public water supply; irrigation of crops and other agricultural uses; swimming and other primary contact recreation; and boating, fishing and other recreational uses.

Section 303(d) of the Federal Clean Water Act (CWA) requires states to identify those waterbodies 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) to protect the water bodies. Furnace Brook is not listed on the Vermont 303(d) List. However, Furnace Brook is in the Lake Champlain Watershed which had been previously listed on the 303(d) list for phosphorus. Consequently, the State

of Vermont established a phosphorus TMDL for Lake Champlain to reduce and prevent blooms of aquatic plant growth caused by excessive phosphorus loading. The Lake Champlain phosphorus TMDL included an allocation of allowable phosphorus loading (i.e., wasteload allocation) for the Pittsford National Fish Hatchery of no more than 1,523 pounds per year.

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 Vermont Water Quality Standards contain requirements for conventional and toxic pollutants in order to provide protection for designated uses in the receiving waters. 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 requirements, 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 Vermont Antidegradation Policy is found in Section 1-03 of the Vermont Water Quality Standards. 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 approximately 45,000 pounds per year, which falls below the production rate which requires application of those standards. However, 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 and EPA's best professional judgment (BPJ) of appropriate technology.

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. The permit has been structured to require that certain effluent limits and monitoring requirements are applicable only when formalin is being used.

Sampling for BOD_5, TSS, and Total Ammonia is required when cleaning operations are being carried out in order to measure the "worst case" discharge of these pollutants, as well as during normal operations.

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). That drought flow in Furnace Brook at the point of discharge is estimated to be 1.05 cubic feet per second (cfs).

The rationale for the permit requirements is as follows:

Flow -- The draft permit proposes a monthly average flow limit of 2.6 mgd and a daily maximum limit of 3.0 mgd. These flow limits are consistent with the flow limitations in the Final Discharge Permit (#3-1188) for this facility issued by the State of Vermont Department of Environmental Conservation on December 3, 2007.
Reporting of the monthly average and daily maximum is required.

BOD_5 and TSS -- 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 loading limits of 250 lbs/day, also daily maximum values, were calculated using the concentration limits and the maximum daily flow value (3.0 mgd) .

Maximum Daily BOD_5 and TSS = 3.0 mgd x 10 mg/l x 8.3379 (conversion factor)
Maximum Daily BOD_5 and TSS = 250 lbs/day

Quarterly monitoring is required both during cleaning operations and during normal operations to allow comparison of the effect cleaning has on the effluent quality. Since the monitoring frequency is quarterly and daily maximum limits are imposed, average monthly and average weekly limits are not needed.

Total Ammonia -- High concentrations of ammonia can be toxic to aquatic life and could potentially violate the state water quality standards. The concentrations of ammonia measured previously in this discharge have generally been low (maximum concentration of 0.14 mg/l). However, because ammonia is contained in the metabolic wastes of fish, monthly monitoring and monthly average and daily maximum limits are proposed. The monthly average limit of 1.6 and daily maximum limit of 6.9 are consistent with the water quality based ammonia limits included in the facility's draft permit (#3-1188) prepared by the State of Vermont. Similar to the monitoring requirements for BOD and TSS, monitoring during cleaning operations and normal operations are both required.

Calculation of the ammonia limitations:

Chronic Ammonia Water Quality Criterion = 1.32 mg/l (pH = 8, Temp.= 24°C)
Acute Ammonia Water Quality Criterion = 5.62 mg/l (pH = 8)
7Q10 Flow (Q_{7Q10}) = 1.05 cfs
Effluent Flow ($Q_{discharge}$) = 4.6 cfs
Dilution Factor = ($Q_{7Q10} + Q_{discharge}$)/ $Q_{discharge}$
= (1.05 cfs + 4.6 cfs)/4.6 cfs
= 1.22

Ammonia Limit = Water Quality Criteria x Dilution Factor
Monthly Average Ammonia Limit = 1.32 mg/l x 1.22
Monthly Average Ammonia Limit = 1.6 mg/l

Daily Maximum Ammonia Limit = 5.62 mg/l x 1.22
Daily Maximum Ammonia Limit = 6.9 mg/l

Total Phosphorus -- The annual loading limit of 1523 pounds is based on the Lake Champlain Phosphorus TMDL which was established September 25, 2002 to protect Lake Champlain from excessive aquatic plant growth caused by nutrient enrichment. State water

quality standards are the basis for the nutrient budget established in the TMDL. The monitoring frequency for total phosphorus shall be once per week in order to adequately characterize discharge concentrations and estimate the annual phosphorus loading discharged by the facility.

pH -- The limits, within the range of 6.5 through 8.5 standard units, are based on the Vermont Water Quality Standards.

Dissolved Oxygen (DO) – The draft permit proposes a DO limit of not less than 7.0 mg/l which is consistent with Vermont's adopted DO criterion of 7.0 mg/l for streams that are designated as cold water fish habitats. The limit is included in the draft permit because the use of formalin can potentially deplete the oxygen content of water. Therefore, the draft permit proposes that DO monitoring for dissolved oxygen (DO) shall be conducted only during the use of formalin.

Formaldehyde -- Concentrated aquatic animal production facilities may use biocides. The most common of which are formalin products (Paracide-F, Formalin-F, or Parasite-S) which contains formaldehyde gas at approximately 37 percent by weight. Formalin is used for the therapeutic treatment of fungal infections and external parasites of finfish and finfish eggs. During the permit application process, EPA learned that the facility may use formalin products as a biocide when necessary.

Formalin use should be consistent with U.S. Food and Drug Administration (FDA) labeling instructions (21CFR 1 § 529.1030). Per those instructions, formalin is to be used only 1-hour per day in raceways and tanks for the treatment of finfish. Finfish eggs may be treated 15 minutes per day following FDA guidelines. Prophylactic use of formalin is strictly prohibited. **Note: These application rates are only presented as examples and any drug application should always be made in accordance with the container's labeling instructions.**

Toxicity data indicate that formalin is toxic to aquatic organisms at concentrations below FDA labeling guidelines. Therefore, an effluent limitation for formaldehyde is needed for this facility. There are currently no water quality criteria for formalin or formaldehyde established in the Vermont Water Quality Standards. However, EPA has followed a methodology previously developed by the Massachusetts Department of Environmental Protection to establish an effluent formaldehyde limitation for this facility. Using the same methodology, EPA has previously established effluent formaldehyde limitations for several fish hatcheries owned and operated by the Commonwealth of Massachusetts.

This methodology is based on review of a U.S. Fish and Wildlife document (Bills et al. 1977) which lists LC_{50}s for formalin for a variety of fingerling fish tested at 12^{o} Celsius for a maximum of 96 hours. Two species of *Ictalurid* common to local waters were selected as appropriate indicator species. Black bullhead had a 96-hour LC_{50} of 62.1 mg/l. Channel Catfish has a 96-hour LC_{50} of 65.8 mg/l.

EPA recommends use of a factor of 0.3 to adjust the typical LC_{50} endpoint to a LC_1 value

(virtually no mortality) (see Technical Support Document for Water Quality Based Toxics Control, EPA-440/4-85-032, Sept. 1985). This returns acute formalin threshold values of 18.6 mg/l, and 19.7 mg/l, respectively.

Black Bullhead
62.1 mg/l * 0.3 = 18.6 mg/l

Channel Catfish
65.8 mg/l * 0.3 = 19.7 mg/l

No chronic data are available for formalin. Therefore EPA has relied on a review of an EPA compiled list of Acute to Chronic ratios (ACRs) to calculate the chronic values. Based on this review, an ACR value of 10 (multiplier of 0.1) was selected to calculate the chronic formalin threshold values.

Black Bullhead
18.6 mg/l * 0.1 = 1.9 mg/l

Channel Catfish
19.7 mg/l * 0.1 = 2.0 mg/l

Using the more stringent chronic threshold value for formalin of 1.9 mg/l and the amount of formaldehyde in formalin (37% by weight), the formaldehyde effluent limitation is calculated to be 0.7 mg/l. Due to the toxicity of this compound, zero dilution (i.e. dilution factor =1) is used in the calculation.

Formaldehyde Limit = (1.9 mg/l * 0.37) = 0.7 mg/l

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.

The permit requirements contain a condition which forbids the use of sodium hypochlorite or other chlorination chemicals, which are sometimes used in fish hatcheries to control diseases. Residuals from chlorination can be extremely toxic to aquatic biota if discharged into surface waters. This requirement is used in lieu of monitoring for these chemicals which the permittee did not apply to use or discharge. This is based on the state water quality standards.

"Medications and disease control chemicals," other than those already limited and monitored for, are covered by a condition in the permit. This condition 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 condition containing detailed requirements for preparing 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.

The permit also contains a special condition related to sampling of the four discharge points from the facility. The first requires that a sampling method be developed which will produce a representative sample for the facility when more than one of the discharge pipes contains flowing effluent.

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.

EPA's review of available EFH information indicates that Furnace Brook is not designated EFH for any federally managed species. Therefore, EFH consultation with NOAA Fisheries is not required.

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 Vermont Department of Environmental Conservation 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 Contact

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

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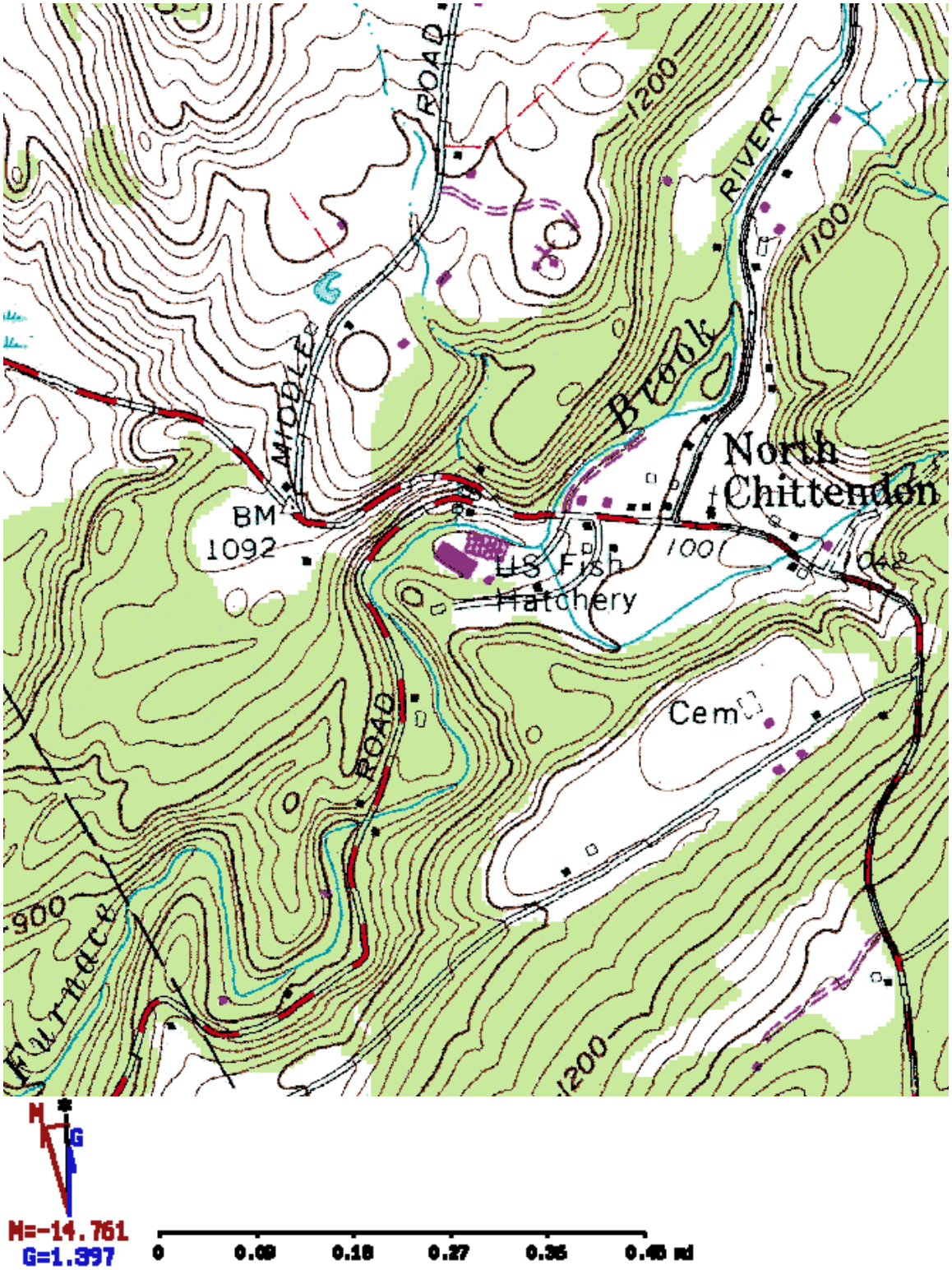
Tel: (617) 918-1537
email: voorhees.mark@epa.gov

Date: _____

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

ATTACHMENT 1
Figure 1. Pittsford National Fish Hatchery
4 Holden Road, Pittsford, Vermont 05763



Source: USGS Chittenden (VT) Quadrangle