VERMONT

**Vermont Department of Environmental Conservation** *Agency of Natural Resources*
Watershed Management Division
Barre Regional Office
5 Perry Street, Suite 80 [phone] 802-476-0190
Barre, VT 05641 [fax] 802-476-0131
www.watershedmanagement.vt.gov [cell] 802-279-1143

# AUTHORIZATION TO CONDUCT NEXT FLOOD MEASURES

Pursuant to Section F of the Vermont Stream Alteration General Permit

Project Number: **SA-03-** 110 **-2015**

Applicant Name: TOWN OF BARNET Phone: 802.633.2256

Mailing Address: PO BOX 15, BARNET VT. 05821

Project Location: HARVEY'S LAKE DAM

Email: TOWNCLERK@BARNETVT.ORG

The Secretary of the Vermont Agency of Natural Resources (VT ANR) has determined that:

1. This project authorizes the removal of flood debris, sediment and associated vegetation blocking the spillway of the subject dam.
2. The proposed activity is eligible for coverage under the VT ANR Stream Alteration General Permit – Next Flood Measures.
3. The proposed activity will meet the terms and conditions of Section E of the General Permit provided:
   a) The project will be completed and approved as shown on the plan dated March 2015, prepared by ROBERT DESROCHERS, and approved by the Vermont Agency of Natural Resources.
   b) The project is proportional to the threat and conditioned to cease when the threat to life or to improved property has ended.
   c) The project will not result in a threat to life, public health or safety.
   d) The project will meet the standards detailed in subsection E.2.1 and E.2.2 of the General Permit.
   e) The project will meet Stream Alteration Standards to the greatest extent possible.
   f) A pre-construction meeting is held between the contractor, owner/applicant, and the River Management Engineer.
   g) The River Management Engineer is notified by phone or email when construction begins and when the project is complete.
   h) A final construction inspection is required for any culvert and bridge related work.
   i) Additional conditions: 1.) VT F&W WORKING DATES REQUESTED: JUNE 1 - OCTOBER 1.
      2.) LIMITS OF WORK WILL BE DEFINED AND STAKED WITH P. ROSS.
      3.) E+SC PLAN WILL BE DEVELOPED AND ADHERED TO DURING WORK.

If there are any changes in the project plan or deviation in construction from the plan, the Permittee must notify the River Management Engineer immediately.

If the project is constructed as you have described, as shown on the above referenced approved plans and according to the above conditions, there is no reason to expect any violation of Vermont Water Quality Standards.

David K. Mears, Commissioner
Department of Environmental Conservation

by: Patrick J. Ross, P.E. dated: 3-10-2015
Patrick Ross, P.E., River Management Engineer

VERMONT AGENCY OF NATURAL RESOURCES

# STREAM ALTERATION INDIVIDUAL PERMIT APPLICATION

10 VSA, CHAPTER 41, SUBCHAPTER 2

**Agency Use Only**

Project # _____

Receipt Date _____

Applicant Name TOWN OF BARNET

Mailing Address P.O. BOX 15

BARNET, VT 05821

Phone 802-633-2256 Cell _____ Email townclerk@barnetvt.org

Project Location: Town BARNET, VT Stream HARVEY'S LAKE OUTLET Lat 44° 18' 28"

Nearby town highway or state route 477 WEST MAIN ST. **ATTACH MAP** Long 72° 08' 22"

Project Description:

Magnitude (length, volume, etc.) 400' x 40' x 5' DEEP

APPROX 3000 CUBIC YARDS

Purpose NEXT FLOOD PROTECTIVE MEASURE / REMOVAL OF IN-STEAM MATERIALS

Construction Procedure SEE ATTACHED

Erosion/Sediment/Water Control Procedure SEE ATTACHED

**ATTACH 2 COPIES** : layout plan, typical or surveyed cross sections, stream profile and pertinent hydraulic or hydrologic information

Consultant/Project Supervisor ROBERT F. DESROCHERS FAIRBANKS MILL, INC. Phone 802-748-8094 Email robert@fairbanksmill.com

Duration of in-stream construction (anticipated) INSTREAM: 1 WEEK TOTAL: 2 WEEKS

Name and addresses of landowners and/or abutters adjacent to or across the stream from the project: Signatures are necessary if you intend to work on adjacent property or if the project will directly affect the property of others. Attach extra sheet, if needed.

Name SEE ATTACHED LIST Address _____

Name _____ Address _____

Name _____ Address _____

****APPLICANT MUST FILE COPY OF THIS APPLICATION WITH TOWN CLERK AND ADJOINERS****

CERTIFICATION: I hereby certify that the information on this application is, to the best of my knowledge, true and accurate and that I have forwarded a copy of this application to the selectboard and town clerk of the town in which this project is to occur and to each landowner adjoining or across the stream from the project area as required in the Vermont Stream Alteration Rule. **I recognize that by signing this application I am giving consent to employees of the State to enter the subject property for the purpose of processing this application and for ensuring the compliance with subsequent agency decisions relating to the project.**

Print Full Name ROBERT F. DESROCHERS, PROJECT MANAGER FOR TOWN OF BARNET

Signature of Applicant Robert F. Desrochers Date MARCH 5, 2015

NOTE: A PERMIT MAY BE REQUIRED FROM THE US ARMY CORPS OF ENGINEERS. For information contact:
US Army Corps of Engineers, VT Project Office, 8 Carmichael Street Suite 205, Essex Jct VT 05452 802-872-2893

**ENCLOSE $225.00 APPLICATION FEE PAYABLE BY CHECK OR MONEY ORDER TO THE "STATE OF VERMONT"**
**MUNICIPALITIES ARE EXEMPT FROM FEE ✓**

ATTACHED - VTANR DAM SAFETY REPORT

P.O. Box 86
St. Johnsbury, VT 05819-0086

CONSTRUCTION
SERVICES

FAIRBANKS MILL
INCORPORATED

Patrick J. Ross, P.E.
River Management Program
5 Perry Street, Suite 80
Barre, VT 05641

March 5, 2015

Dear Patrick:

Attached please find an application for a Stream Alteration Permit for the Town of Barnet Harvey's Lake Outlet. This application seeks authorization to perform "Next Flood Protective Measures", specifically, "removal of instream materials" per subpart 27-704(c) of the Vermont Stream Alteration Rule.

It should be noted that there is a strong likelihood that, beyond this current effort, the Town of Barnet will continue to explore solutions to the Harvey's Lake water quality issues caused by the periodic "backflow" of South Peacham Brook into the lake, primarily caused by the location and configuration of the Harvey's Lake Dam. Those solutions will most likely focus on the following:

1) Increase the spillway capacity of the existing dam by significantly lowering the spillway elevation.

2) Implement more consistent and accurate lake level controls by constructing a new spillway / water control structure at the outlet of the lake.

3) Improve flood plain function through removal of deposited materials, further reducing the frequency and severity of backflow events.

It is assumed that primary regulatory authority for the first two of these future items would center upon the State of Vermont / Agency of Natural Resources / Department of Environmental Conservation and that regulatory authority for Item 3 would be focused upon both Vermont ANR / DEC and the U.S. Army Corps of Engineers.

The current project deals with the removal of deposited instream materials that have significantly reduced the flow capacity of the existing spillway. Removal of this material will restore the flow capacity of the existing spillway to its full design flow. Restoration of the spillway capacity will reduce the risk of a breach of the left abutment, and destruction or severe damage to the West Barnet Garage and the Coppenrath residence. There will be a reduction of the flooding hazard for the residences located upstream of the Garage, on the east side of Main Street. Also, there will be a reduction of the risk of flood damage to low lying camps and

residences around the lake, along with waterfront infrastructure such as retaining walls and septic systems (see "Flood Flows" table).

Removal of this deposited material is in accordance with recommendations of the June 6, 2007 Harvey Lake Dam Safety Inspection Report prepared for the Town of Barnet by Milone & MacBroom.

There will be no modification to the existing dam structure. Nor will any of the anticipated excavation activities encroach upon or influence the stability of the existing dam structure.

Limits of the excavation are illustrated in FMI Drawings No. 2, 3, and 4. Horizontal limits of the excavation will be to the natural, pre-existing limits as delineated by vegetative changes. Longitudinal limits will start at the spillway and continue to the "old boathouse" site, approximately 400 feet upstream of the dam. Vertical limits will be as shown on the M & M cross sections that have been incorporated into Drawing 4. During excavation, elevations may be adjusted slightly to better match actual field conditions with the goal of transitioning into stable materials, slope, or configuration. Excavation limits will be delineated and marked at an on-site preconstruction conference that will include the landowner, VT/ANR rivers engineer, and municipal officials.

Materials will be direct loaded from hydraulic excavator into dump trucks for off-site upland disposal. Through sorting, screening, and processing, it is hoped that the bulk of the excavated materials can be recycled for productive reuse. The sequence of work is outlined in Drawing 5.

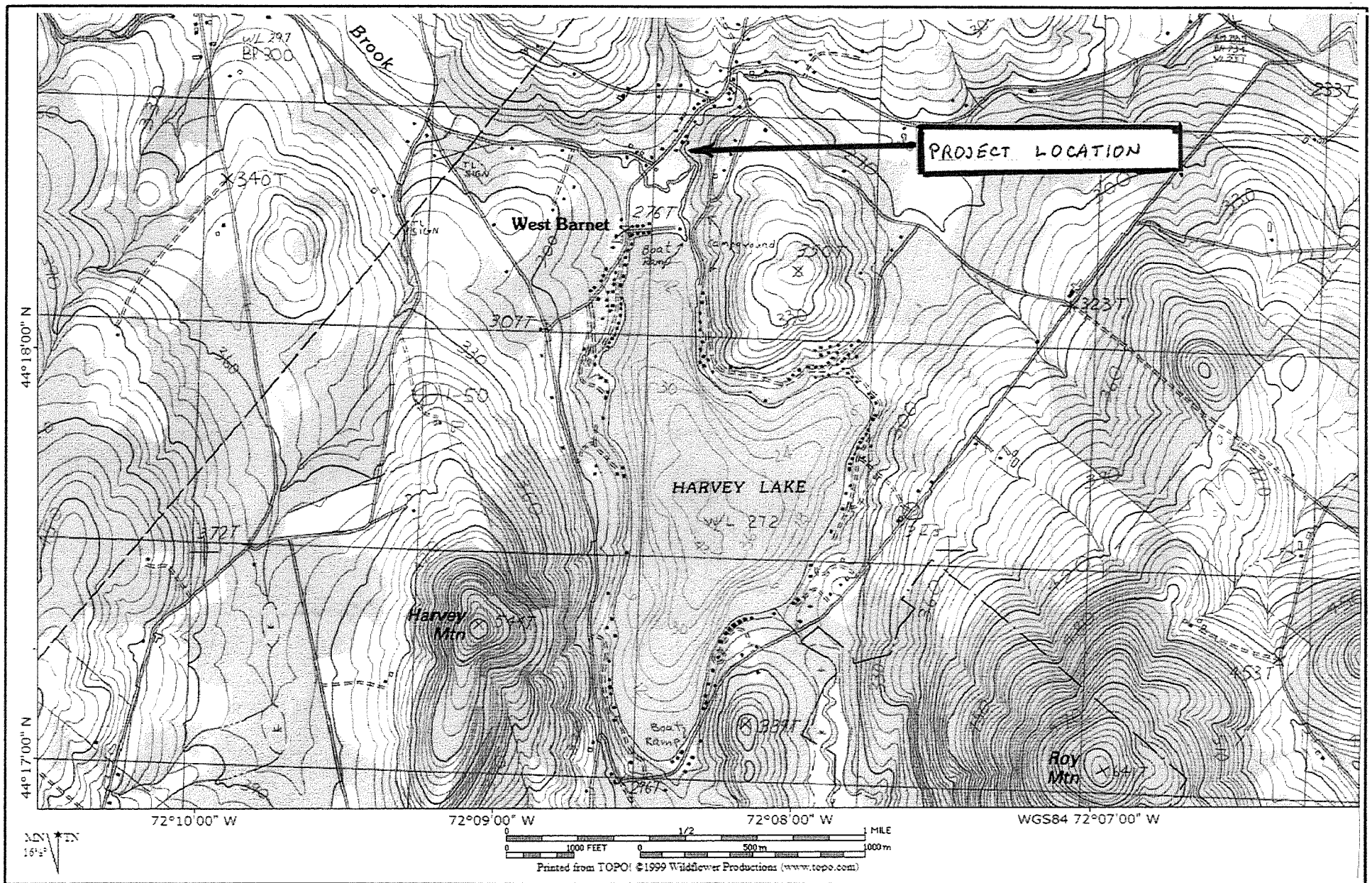
Scheduling of the work will be as directed by the Barnet Selectboard but shall generally occur after June 15, 2015 and shall be completed by October 15, 2015. The work itself is expected to be completed within a two week time frame, with the actual excavation work expected to take four or five days. While recognizing that increased flooding risk is associated with any delay of the project, strong consideration is being given to scheduling the work during the normal fall drawdown of the lake during a two week period in late September or early October.

This project has a relatively large cadre of interested parties, both locally and within the regulatory community. I have included a service list that I view as a minimum starting point. You may wish to include others as we progress. Please contact me if have any questions or if you need any additional information.

Best regards,

Robert F. Desrochers

Robert F. Desrochers, Project Manager

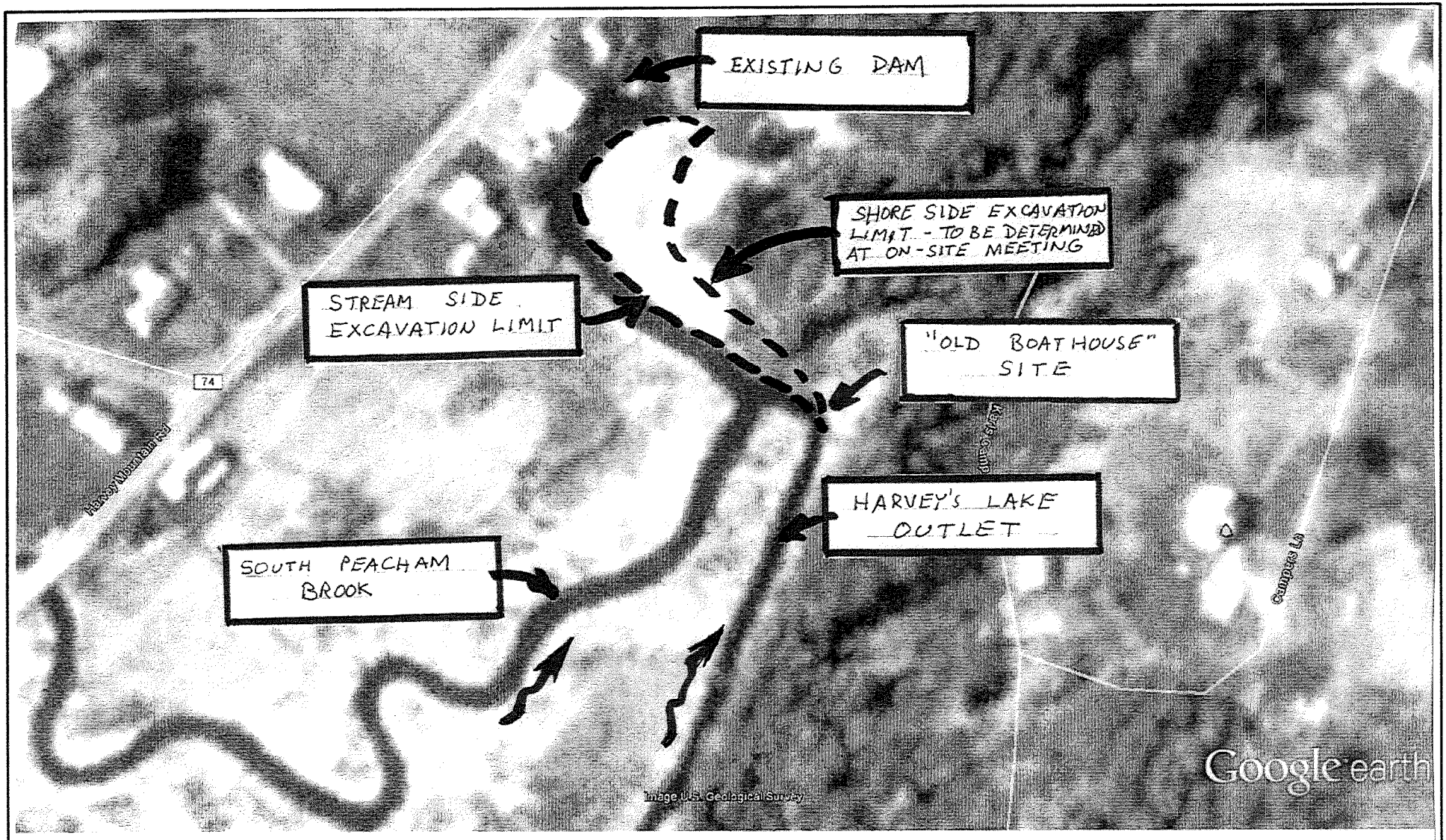



# FAIRBANKS MILL

*ST. JOHNSBURY, VERMONT*

## LOCATION MAP
## HARVEY'S LAKE OUTLET
## BARNET, VERMONT

| SCALE: | DRAWN BY: |
|---|---|
| map scale | RFD |
| DATE: | DRAWING NO: |
| March 3, 2015 | 1 |




Google earth

feet 800

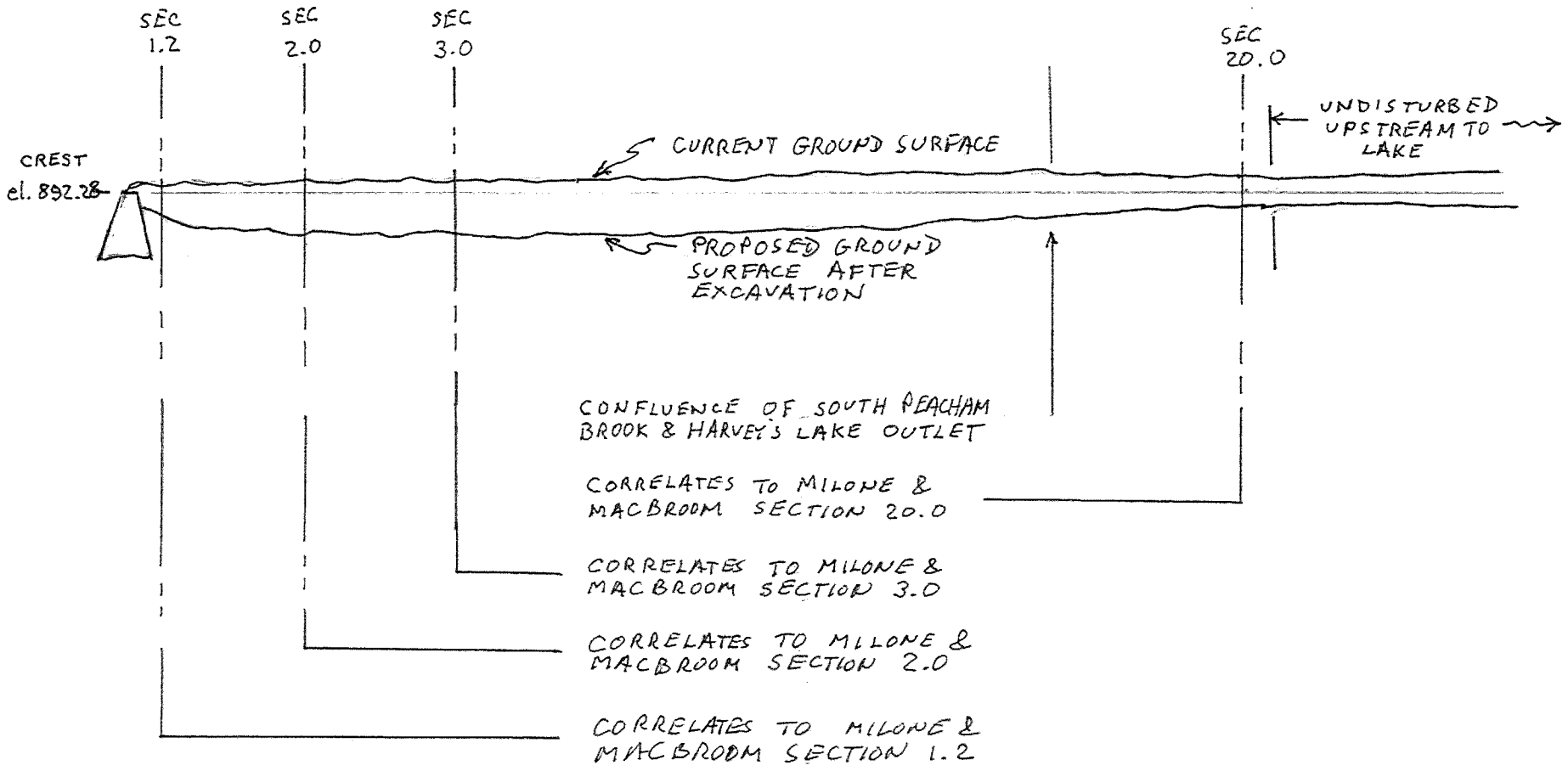
meters 200

# FAIRBANKS MILL

*ST. JOHNSBURY, VERMONT*

## PROJECT OVERVIEW
## HARVEY'S LAKE OUTLET
## BARNET, VERMONT

| SCALE: | DRAWN BY: |
|---|---|
| map scale | RFD |
| DATE: | DRAWING NO: |
| March 3, 2015 | 2 |




LONGITUDINAL SECTION

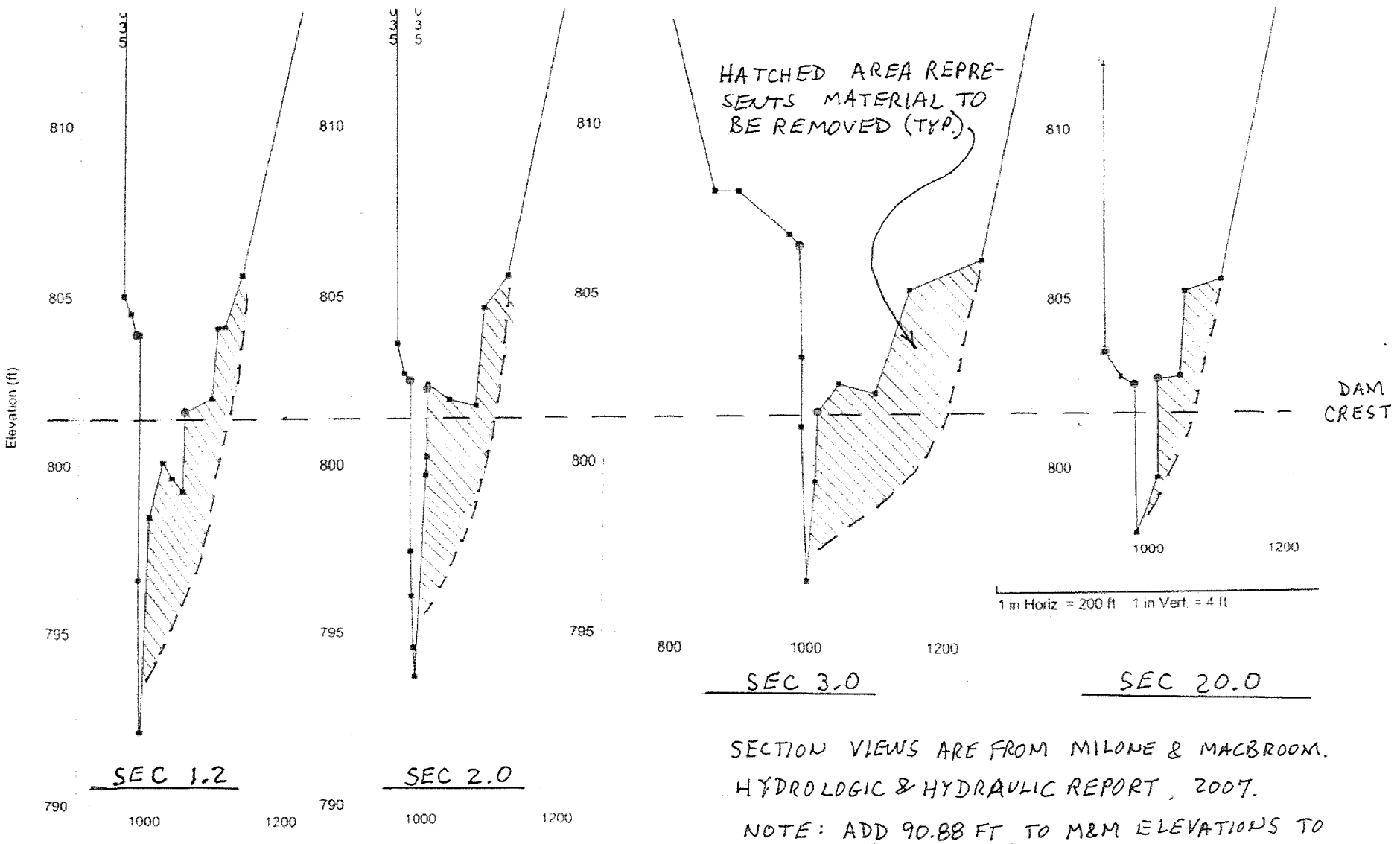
HORIZ SCALE: 1" = 60' VERT: 1" = 30'

**FAIRBANKS MILL**

*ST. JOHNSBURY, VERMONT*

**SECTION VIEWS**
**HARVEY'S LAKE OUTLET**
**BARNET, VERMONT**

| SCALE: | DRAWN BY: |
|---|---|
| as shown | RFD |
| DATE: | DRAWING NO: |
| March 3, 2015 | 3 |




SECTION VIEWS ARE FROM MILONE & MACBROOM. HYDROLOGIC & HYDRAULIC REPORT, 2007.

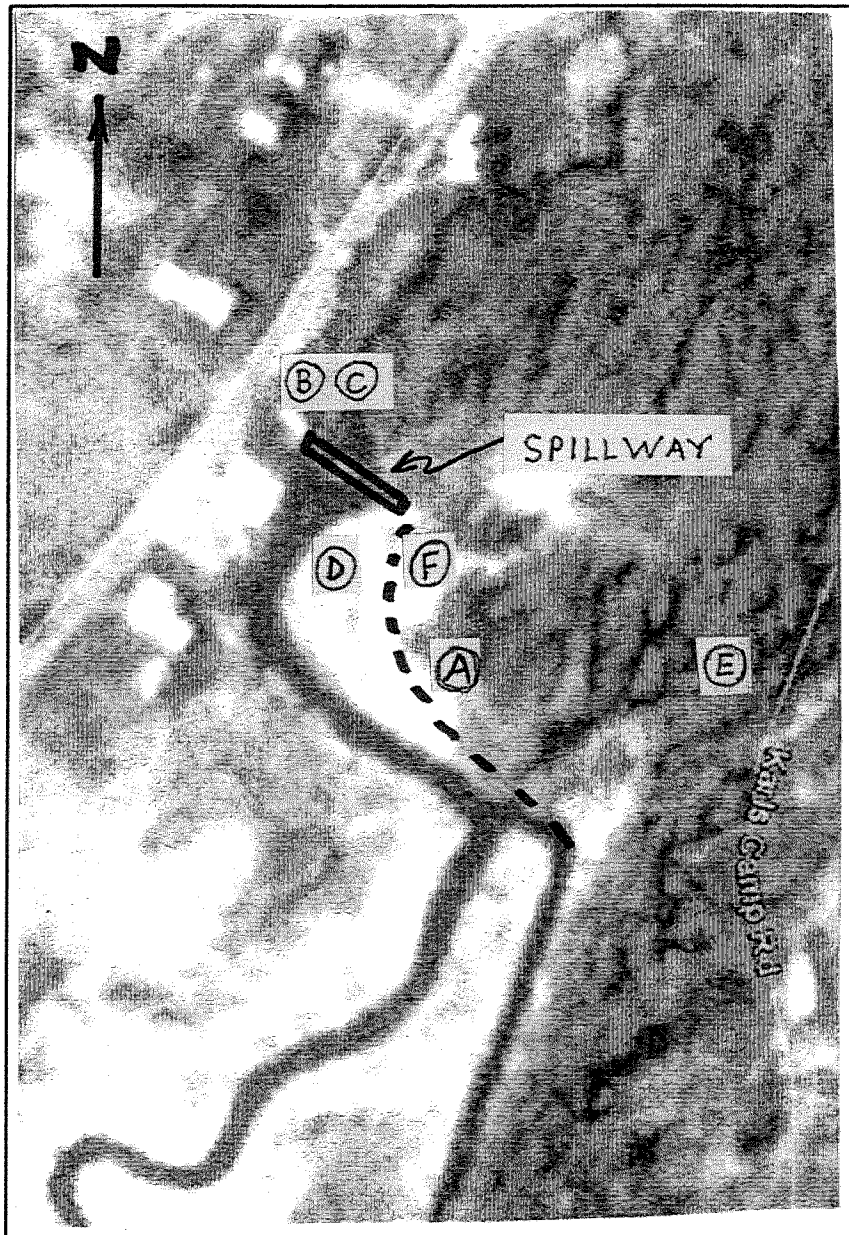
NOTE: ADD 90.88 FT TO M&M ELEVATIONS TO GET USGS ELEVATIONS.

# FAIRBANKS MILL

*ST. JOHNSBURY, VERMONT*

## CROSS SECTIONS
## HARVEY'S LAKE OUTLET
## BARNET, VERMONT

| SCALE: | DRAWN BY: |
|---|---|
| as shown | RFD |
| DATE: | DRAWING NO: |
| March 3, 2015 | 4 |




## WORK SEQUENCE

(A) AT PRE-CONSTRUCTION CONFERENCE, DELINEATE LIMITS OF EXCAVATION, INSTALL MARKINGS.

(B) OVER THE COURSE OF SEVERAL DAYS, USING STOPLOGS, DRAW WATER LEVEL DOWN TO ELEVATION 889.0.

(C) REPAIR, CLEAR, AND GRADUALLY OPEN LOW LEVEL GATE. DRAW WATER LEVEL DOWN TO APPROX. 884.0.

(D) STARTING AT SPILLWAY, WORKING FROM DOWNSTREAM TO UPSTREAM, EXCAVATE DEPOSITED MATERIAL AS SHOWN IN SECTIONS ON DRAWING NO. 4. EXCAVATE "IN THE DRY"

(E) MATERIAL TO BE LOADED DIRECTLY INTO TRUCKS FOR TRANSPORT TO UPLAND STOCKPILE.

(F) DISTURBED AREAS TO BE SEEDED & MULCHED, WATER LEVELS TO BE GRADUALLY RESTORED TO 892.28 (CREST ELEVATION). * RFD

**FAIRBANKS MILL**

*ST. JOHNSBURY, VERMONT*

**PROJECT WORK PLAN**
**HARVEY'S LAKE OUTLET**
**BARNET, VERMONT**

| SCALE: | DRAWN BY: |
|---|---|
| nts | RFD |
| DATE: | DRAWING NO: |
| March 3, 2015 | 5 |



* NOTE: E+SC PLAN TO BE DEVELOPED & ADHERED TO DURING CONSTRUCTION. RFD

VERMONT

**Vermont Department of Environmental Conservation**
Facilities Engineering Division
1 National Life Drive, 1 Main [phone] 802-490-6229
Montpelier, VT 05620

*Agency of Natural Resources*

MEMORANDUM

| | |
|---|---|
| TO: | For the Record |
| FROM: | Steven Hanna, Dam Safety Engineer |
| DATE: | August 14, 2014 |
| SUBJECT: | Inspection of Harvey's Lake Dam, Barnet, VT |

On July 17, 2014 Stephen Bushman, P.E., Steven Hanna made a routine periodic inspection of Harvey's Lake Dam located in Barnet, Vermont, State Identification Number 12.01. The inspection was carried out under the provisions of Title 10 of the Vermont Statutes Annotated, Section 1105. Several photographs and field notes were taken during the inspection. The town of Barnet owns the dam. Gary Bunnell, Select Board Member, attended the inspection. The last inspection of the dam was on August 3, 2010. This report updates previous observations and records additional information.

## OVERALL CONDITION

The overall condition of the dam is fair. There is significant build up of debris and silt on the upstream face of the dam, especially the right (facing downstream) side.

## DOWNSTREAM HAZARD CLASSIFICATION

The dam is classified as a Class 2 ("significant hazard") structure.

## JURISDICTION

Since the dam impounds more than 500,000 cubic feet, any alteration, reconstruction or breaching would require prior approval from the Department under provisions of Title 10 of the Vermont Statutes Annotated, Chapter 43.

## RECOMMENDATIONS FOR OWNER

1. Clear the vegetation and material blocking the right side of the spillway to reestablish the design discharge capacity.

2. Maintenance brushing and mowing should encompass all areas within 10 to 15 feet of the concrete. This will prevent woody vegetation from becoming established and encroaching into the concrete and makes the inspection and monitoring of the dam easier.

3. Add rock armor to the eroded area next to the concrete on the left upstream abutment.

4. Continue to remove any debris from the approach to the spillway weir, stop log channels, and fish ladder.

5. Continue to operate and grease the sluice gate annually.

## INSPECTION

The inspection of the dam was conducted on July 17, 2014 at 1300 hours. The weather was mostly cloudy with temperatures in the 70's. The dam was accessed via the West Barnet Garage and the adjacent Real Estate Agency. The following was observed:

1. Dam Section:

   a. Upstream Face: The upstream face was mostly underwater but the concrete appeared to be in fair condition. The right side of the face was difficult to inspect due to the accumulation of sediment and vegetation growing directly upstream of the structure. The left abutment was eroded to about 5 feet left of the concrete. The town representative reported significant accumulation of sediment in the upstream channel, especially on the right side over the years. This is consistent with observations on site.

   b. Downstream Face: The downstream face of the concrete appears to be in fair condition with only minor weathering. There was rock placed at the toe area along the entire spillway section. The rock tended to be larger on the right side of the toe. The right side of the face was heavily overgrown with brush, woody vegetation and small trees.

   c. Crest: The crest of the concrete had minor weathering but appeared in generally good condition. Vegetation and sediment accumulation upstream on the right caused most of the flow to be directed over the left side of the crest spillway. Trees, brush and grass were growing on top of the concrete crest as well as build up soil on the right side.

   d. Abutments: The right abutment was severely overgrown with trees and brush due to the accumulated sediment upstream of the dam. The left abutment had moderate brush, a tree and flowers growing but was generally firm and dry.

2. Spillway:

   a. Approach Channel: The approach to the stop log channel was clear. The right side of the broad crested weir was blocked by vegetation. The remaining spillway section was clear.

   b. Control Section: The stop log channel was in good condition. The stop logs appeared to be in good condition.

   c. Discharge Channel: The discharge channel was well lined with rock. The left side of the channel was clear of debris but the right side was overgrown with brush and trees.

3. Fish Ladder:

   a. Upstream Channel: The upstream approach was clear but the entrance was blocked with planks acting as stop logs.

b. Ladder Section: The concrete was in fair condition with only minor weathering. The wood traps (planks) were gone.

c. Downstream Channel: The downstream approach channel was clear of debris.

4. Sluiceway:

a. Concrete: The concrete surrounding the sluice gate appeared to be in fair condition. It was difficult to observe the concrete below the waterline.

b. Approach Channel: The approach was clear.

c. Sluice Gate: The sluice gate operator is on the top of the concrete spillway. There was spalling of the concrete where the operator is fastened to the spillway. The operator appeared to be bent, and there was some concrete fracturing where the operator was fixed to the concrete structure. The gate was not operated during the inspection. The gate appeared to be in fair condition.

## HYDROLOGY AND HYDRAULICS

The drainage area at this site is about 12,800 acres. The pond area at the normal pool is about 409 acres with storage of about 1,900 acre-feet. The storage of the pond at maximum pool is about 2,700 acre-feet. The maximum discharge capacity of the dam is about 1,230 cubic feet per second based on an unobstructed spillway.