Emergency Action Plan (EAP)

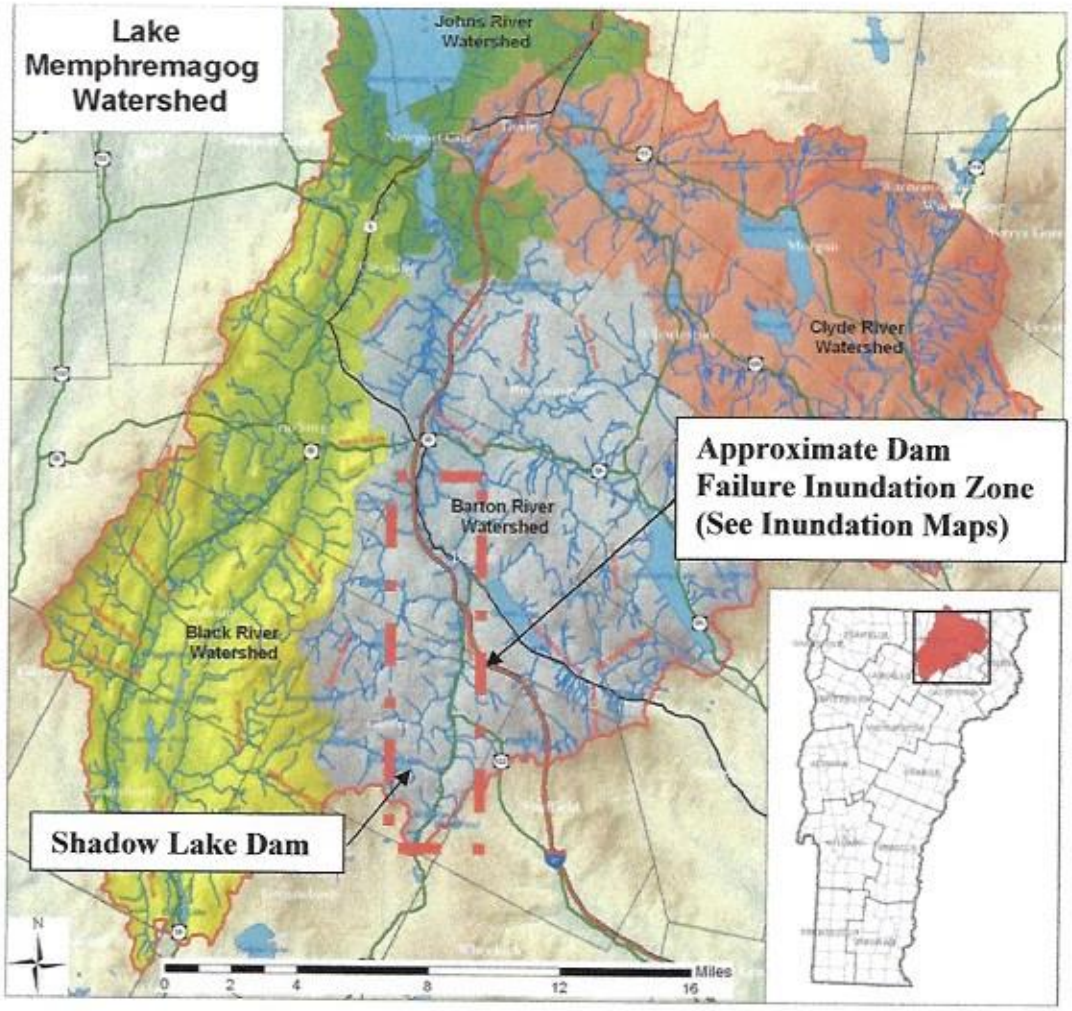
Shadow Lake Dam

SIGNIFICANT HAZARD POTENTIAL

Vermont Dam Inventory ID No. 81.02

National Inventory of Dams (NID) No. VT00070

Glover, Vermont



Shadow Lake, Glover, VT Lake Memphremagog Watershed

Reviewed and Updated:

Glen Gay
Owner

8/14/25
Date

Glen Gay
Incident Commander

8/14/25
Date

EAP Date: **August 8, 2024 – updated 8/6/2025**

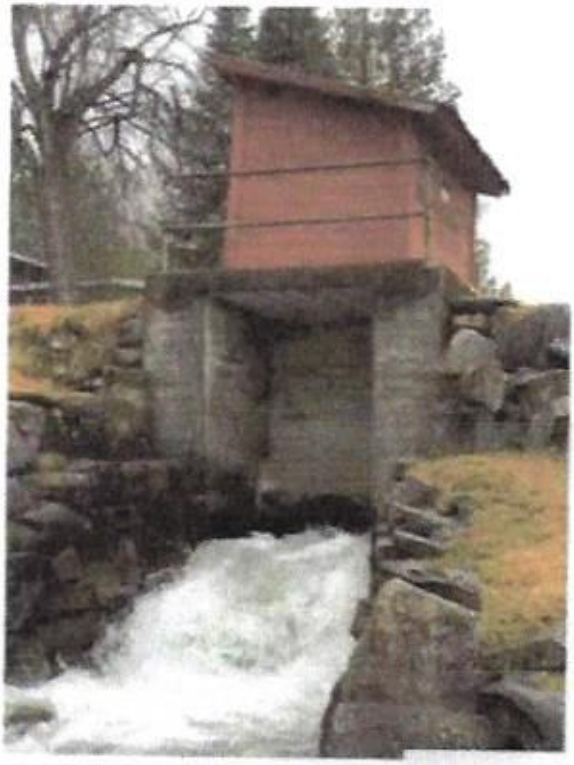
Basic EAP Data

Purpose:

The purpose of this EAP is to reduce the risk of loss of life, property loss, lifeline loss, or environmental loss due to an unusual incident or emergency event at Shadow Lake Dam in Glover. The *Emergency Notification Chart* and the *Dam Failure Flood Inundation Maps* are the most important elements of this EAP. This EAP is Shadow Lake Dam, which is a SIGNIFICANT hazard potential dam, which is a dam where failure or mis-operation is anticipated to result in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.

Dam Description

Height (ft): 11.5 (1,399.8' top – 1,388.3' bottom)	Length (ft.) 130.0
Type: Earth fill with masonry walls	Drainage Area (acres): 3,386 (5.3 SM)
Current Hazard Classification: SIGNIFICANT	Year Built: 1929
Latitude: 44.666580°	Longitude: -72.216380°
Dam Owner/Operator (Town of Glover, VT): Phone: 802 338-5498 Glenn Gage, Selectman. 802 525-7199, 802 624-3463 Theresa Perron, Town Administrator. Address: Town of Glover, 51 Bean Hill Road, Glover, VT 05839	



Directions to dam: (See *Locus Map on Cover*)
Nearest Postal or 911 Address for Dam: Near 996 Shadow Lake Road.
From Glover Town Clerks' Office, take Route 16 South 5 miles to Shadow Lake Road. Turn right on Shadow Lake Road and continue to Stone Shore Road on the right. The dam is located at 996 Shadow Lake Road and is located in front of the property of 996 Shadow Lake Road, park on the road and walk in. There is a right-of-way to the dam on property owned by Karen Stewart.

From Interstate 91: 91S take a right on Rte. 16, 91N take a left on Rte. 16. Continue to Shadow Lake Road on your right. Take Shadow Lake Road to Stone Shore Drive on your right. You will be at your destination. Park on the road and walk in.

To reach the dam from the South, Hardwick, VT, Rte. 15 to Rte. 16N, take a left on Shadow Lake Road to Stone Shore Road on your right. Park on the road and walk in.

Potential Impacted Area
See *Dam Failure Flood Inundation Maps* for the estimated limits of flooding due to a dam incident or failure. The Flood Inundation Maps limits were estimated based on a simulated dam failure during the 1,000-year storm event. Flooding depths and velocities will vary based on loading conditions at time of dam failure, type of dam failure, conditions in the channel downstream of the dam, regional flooding, and other factors. The following roads may be flooded or be at risk should the dam fail. It should be noted that in some cases, there are homes and businesses located adjacent/on these road crossings or within the inundation area. It should be noted that flood inundation limits, depths, and travel times are approximate and represent failure under conditions that may or may not represent worst case scenarios. In any event, emergency managers must exercise caution and conservatism in developing evacuation zones.

Potential Roadway Flooding or Roads at Risk from Dam Failure
Town of Glover
STONE SHORE RD
274 SHADOW LAKE RD
DWINELL DRIVE
PERRON HILL ROAD
ALDRICH LANE
STILL HILL ROAD
SCHOOL STREET
BEAN HILL ROAD
TALBOT LANE
SARGENT LANE
GLOVER ROAD
FULTON ROAD
Town of Barton
GLOVER RD
ROARING BROOK RD
ELM STREET
BARTON ORLEANS RD
RAILWAY ROAD

Population at Risk (PAR):

PAR is defined as the estimated number of people occupying the area inundated due to dam failure prior to the issuance of any warning or evacuation. These may be people that live, work, recreation, or temporarily pass through these areas, all contributing to the PAR estimate. There are several methods for developing the PAR estimate for a dam, which can have varying levels of accuracy. PAR must not be confused with life loss, as PAR includes any population regardless of the degree of exposure to dam failure, flood flow depths and velocities. For example, a home located near the edge of the inundation area where flooding is only several inches deep and well below finished floor elevation of the structure would be counted just the same in the PAR estimate as a home located near the center of the inundation area subject to severe dam failure flood depths and velocities. PAR estimates are a helpful tool in understanding the relative level of impacts of a dam failure but are not the sole indicator of risk and downstream consequence levels. PAR can vary based on time of day and type of real estate in the downstream area (i.e. residential areas will likely have higher PAR at night while commercial areas have higher PAR during the day). The PAR estimate provided below was based on DSS-Wise Lite Dam Failure Analysis performed by the DSP in December 2021 during a maximum pool, sunny day failure scenario (i.e. dam failures at maximum pool/water level at the dam crest). It is possible that other scenarios exist where PAR estimates could vary or even be higher.

Estimated PAR	200 to 400 people

Emergency Notification Chart

Urgent or Developing Event/Incident

Dam Owner or Representative
Town of Glover
(802 338-5498) Glenn Gage
(802 673-4030) Phil Brooks
(802 673-9193) Phil Young
(802 363-2688) Anne Eldridge
(802 525-6227) Cindy Epinette

Public Safety Answering Point
911
(PSAPs (6 in VT) answer 911 calls and dispatch local emergency crews)

(1)

Incident Commander
Glenn Gage
802 338-5498
or
24-Hour 911

(2)

State Dam Safety Official
Benjamin Green
802 622-4093
BENJAMIN.GREEN@VERMONT.GOV

(3)

Dam Owner's Technical Reps.
Weston & Sampson
Thomas Strike
603 263-9499

Burlington
National Weather Service
https://www.weather.gov/btv/
US Dept of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
Burlington, VT, 1200 Airport Drive, South Burlington, VT
(802) 862-2475

Town of Barton EMD:
Gina Lyon, 802 525-4747

Local Emergency Management
PHIL BROOKS
802-673-4030

Vermont State Police
802 334-8881
Nearest Barracks (if applicable)

Local Fire
802-525-3400

Vermont Emergency Management
1-800-347-0488
(24-hour)
VT Emergency Management
Headquarters
45 State Drive, Waterbury,
VT 05671-1300
(800) 347-0488
(802) 244-8721
(888) 545-7598 (TTY)

County Sheriff
802 334-3333

Local Police
802 334-8881

Vermont Agency of Transportation
Michael Booth
(802)-498-8419

Local Department of Public Works/Road Foreman
Mike Pray
802 323-9300

Note:
1, 2, etc., denotes call sequence
First contact may need to call top of the phone tree in addition to noted calls.
Legend
Calls by operator _____ or --------
Second level calls - - - - -

Contact information for the Emergency Management entity in each Town within the dam failure flood inundation area should be included here.

Dam Failure Flood Inundation Maps

The following maps were developed by Dubois & King, Inc. and documented in the report titled, "Hydrologic and Hydraulic Assessment, Shadow Lake Dam, dated January 30, 2023. The analysis was performed using US Army Corps of Engineers HEC-RAS (2D) flood modeling software version 6.1.0. The dam failure simulation was performed assuming 1,000-year flood Inflow Design Flood conditions at Shadow Lake Dam and Watershed and 100-year flooding in downstream tributaries.

The dam failure flood inundation limits, depths, and other characteristics are approximate and are a function of the analytical methods used and assumptions made for the specific analysis. Accordingly, actual inundation limits, flood characteristics, and flooding distance downstream from the dam could vary based on differences in actual meteorological and hydrologic conditions, breach characteristics, variations in floodway conditions, and other factors compared to those assumed for this analysis. While the assumptions used in the analysis may appear to be a severe or an unusual loading condition, it should be noted the possibility of losses due to an incident or failure during less severe loading events, or the potential for greater losses under more severe loading events that can realistically occur. For these reasons, it is of critical importance that the dam failure flood inundation limits be used as a guideline only for establishing emergency notification and evacuation procedures by downstream Emergency Management personnel.

The dam failure flood inundation maps are on the following pages and include a 10-sheet set including an index sheet and nine sheets that show the approximate extents of dam failure flood inundation downstream of the dam in Glover and Barton.

EAP Process

Roles and Responsibilities

Dam Owner/Representative

- As soon as an emergency event is observed or reported, determine the emergency level, whether it is:
  - an unusual event that is slowly developing
  - a potential dam failure situation that is rapidly developing
  - apparent that dam failure is imminent or is in progress
- Obtain State Dam Safety Program and Technical Representative assistance.
- Immediately notify personnel in the order shown on the *Emergency Notification Chart*. Provide updates to the Incident Commander(s) to assist them in making timely/accurate decisions regarding warnings and evacuations.
- Provide leadership to assure the EAP is reviewed, updated, and distributed.

Incident Commander(s)

- Serve as the primary contact person responsible for coordination of all emergency actions within respective Corporate Boundaries. Note, for dams where the dam failure flood inundation area extends over Corporate Boundaries or into multiple towns, there will be multiple Incident Commanders/Emergency Services involved.
- Prepare emergency management personnel for possible evacuations when needed.
  - Initiate warnings and order evacuation of people at risk downstream of the dam.
  - Notify local emergency management services to carry out the evacuations and close roads.
- Decide when to terminate the emergency (in consultation with others).
- Participate in review and update of the EAP.
- This role is often filled by the local Emergency Management Director, Fire Chief, Police Chief, or the Selectboard Chair.

Emergency Management Services

- Coordinate with the Incident Commander.
- When necessary, prepare emergency management personnel for possible evacuations, alert the public as appropriate, and carry out evacuations/close roads, etc.
- Maintain communication with media.
- Participate in review and update of the EAP.
- This role is often filled by the local Fire Department, Police Department, Sheriff's Office, State Police, and or most likely, some combination.

Dam Owner's Technical Representatives

- Advise the dam owner/representative of the emergency level/severity if time permits.
- Advise the dam owner/representative of remedial actions if time permits.
- This role is filled by a consulting engineer acquired and paid for by the Dam Owner.

Vermont Emergency Management

- Provide support (communications, VT-Alert, etc.) to the Incident Commander and Emergency Management Services, as able.

State Dam Safety Agency

- Provide technical assistance to the dam owner/representative of the emergency level/severity if time permits.
- Provide technical assistance to the dam owner/representative of remedial actions if time permits.

Event Detection
Unusual or emergency events may be detected by:

- Observations at or near the dam by the Dam Owner or their representative, government personnel (local, state, or Federal), visitors to the dam, or the public
- Evaluation of instrumentation data
- Earthquakes felt or reported in the vicinity of the dam
- Forewarning of conditions that may cause an unusual event or emergency event at the dam (for example, a severe weather or flash flood forecast)

Emergency Level Determination
After an unusual or emergency event is detected or reported, determine the event emergency level:

Emergency Level 1—Nonemergency, unusual event that is slowly developing:
This situation is not normal but has not yet threatened the operation or structural integrity of the dam, but possibly could if it continues to develop. Technical Representatives and State Dam Safety Officials should be contacted to investigate the situation and recommend actions to take. The condition of the dam should be closely monitored, especially during storm events, to detect any development of a potential or imminent dam failure situation. The Incident Commander and Emergency Management Team should be informed if it is determined that the conditions may possibly develop into a worse condition that may require emergency actions.

Emergency Level 2—Potential dam failure situation that is rapidly developing:
This situation may eventually lead to dam failure and flash flooding downstream, but there is not an immediate threat of dam failure. The Incident Commander should be notified of this situation and placed on alert. The dam condition should be closely monitored and periodically report the status of the situation to the Incident Commander. If the dam condition worsens and failure becomes imminent, the Incident Commander must be notified immediately of the change in the emergency level to evacuate the people at risk downstream.

This emergency level is also applicable when flow through the spillway has or is expected to result in flooding of downstream areas and people near the channel could be endangered. Emergency Services should be on alert to initiate evacuations or road closures if the flooding increases.

Emergency Level 3—Urgent; dam failure appears imminent or is in progress:
This is an extremely urgent situation when a dam failure is occurring or obviously is about to occur and cannot be prevented. Flash flooding will occur downstream of the dam. This situation is also applicable when flow through the spillway is causing downstream flooding of people and roads. The Incident Commander should be contacted immediately so Emergency Services can begin evacuations of all at-risk people and close roads as needed.

Termination
Whenever the EAP has been activated, the need for actions declared, all EAP activities have been completed, and the emergency is over, the EAP operations must eventually be terminated, and follow-up procedures completed.

The Incident Commander, in consultation with appropriate State and Local Officials, is responsible for terminating downstream emergency operations and relaying this decision to the other parties. It is then the responsibility of each person to notify the same group of contacts that were notified during the original event notification process to inform those people that the event has been terminated.

Prior to termination of an Emergency Level 3 event that has not caused actual dam failure, the State Dam Safety Official will inspect the dam or require the inspection of the dam to determine whether any damage has occurred that could potentially result in loss of life, injury, or property damage. If it is determined that conditions do not pose a threat to people or property, the Incident Commander will be advised to terminate EAP operations as described above.

EAP Review and Revision

EAP review

The Dam Owner should review and, if needed, update the EAP at least once every two years (i.e. every other year) or more often, if necessary, changes or updates are identified. The EAP review should include:

- Calling all contacts on the notification chart to verify that the phone numbers and persons in the specified positions are current. The EAP shall be revised if any of the contacts have changed.
- Contacting the Incident Commander to verify the phone numbers and persons in the specified positions. In addition, the Dam Owner should ask where the EAP is kept and if roles/responsibilities are understood.
- Review the inundation map for any changes in downstream development that could impact potential consequences (i.e. new house construction, new culverts, etc.)

The Dam Owner is responsible for updating the EAP. When revisions occur, the Dam Owner shall provide the revised pages and a revised revision summary page to all the EAP document holders.

EAP periodic test

The Dam Owner should consider occasionally hosting/facilitating a periodic test of the EAP. The periodic test would consist of a meeting to review the EAP and conduct a tabletop exercise. Attendance should include the Dam Owner, Incident Commander, and others key responsibilities listed in the EAP. During the test, response to various actions should be discussed and any needed shortcomings of the EAP should be modified.

Record of Revisions

Revision Number	Date	Revisions made	By whom
2	8/8/2024	Updated to meet the standards of the Dam Safety Program,	Town of Glover
3	8/6/25	Updated Incident Commander, Glenn Gage 802 338-5498 Updated Dam Owner's Technical Reps. Weston & Sampson, Thomas Strike 603 263-9499	Town of Glover

Holders of Control Copies of this EAP

Copy Number	Organization	Person receiving copy
1	Dam Owner	Town of Glover gloverte@comcast.net
2	Incident Commander	Glenn Gage glenn@townofglover.com
3	Fire/Police/EMD	Phil Brooks, EMD ame189@yahoo.com
4	Vermont Emergency Management	Vermont Emergency Management 1-800-347-0488
5	DEC Dam Safety Program	Benjamin Green, PE Dam Safety Engineer Benjamin.green@vermont.gov

Unusual or Emergency Event Log and Report

(to be completed during/after the emergency)

Dam name:
Date: Time:

When and how was the event detected?

Weather conditions:
General description of the emergency situation:

Emergency level determination: Made by:
Area(s) of dam affected:

Actions taken to protect dam, property and lives.

Date	Time	Action/event progression	Taken by

Extent of dam damage (if any):

Possible cause(s):

Effect on dam's operation:

Initial reservoir elevation: Time:

Maximum reservoir elevation: Time:

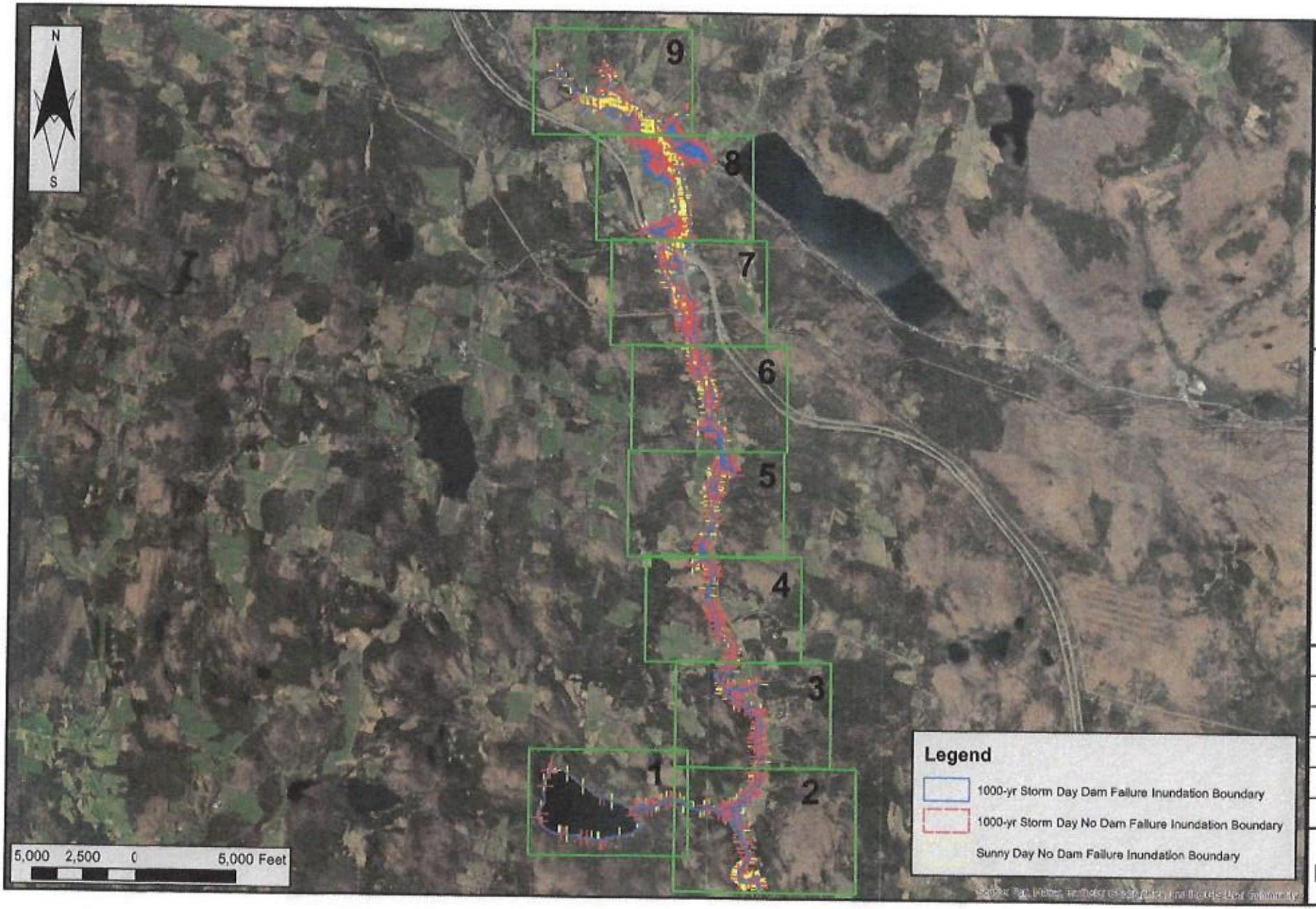
Final reservoir elevation: Time:

Description of area flooded downstream/damages/injuries/loss of life:

Other data and comments:

Observer's name and telephone number:

Report prepared by: Date:



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WATER INVESTMENT DIV.
1 NATIONAL LIFE DRIVE
MONTPELIER, VT 05620

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INUNDATION MAP
SHADOW LAKE DAM
Index Map

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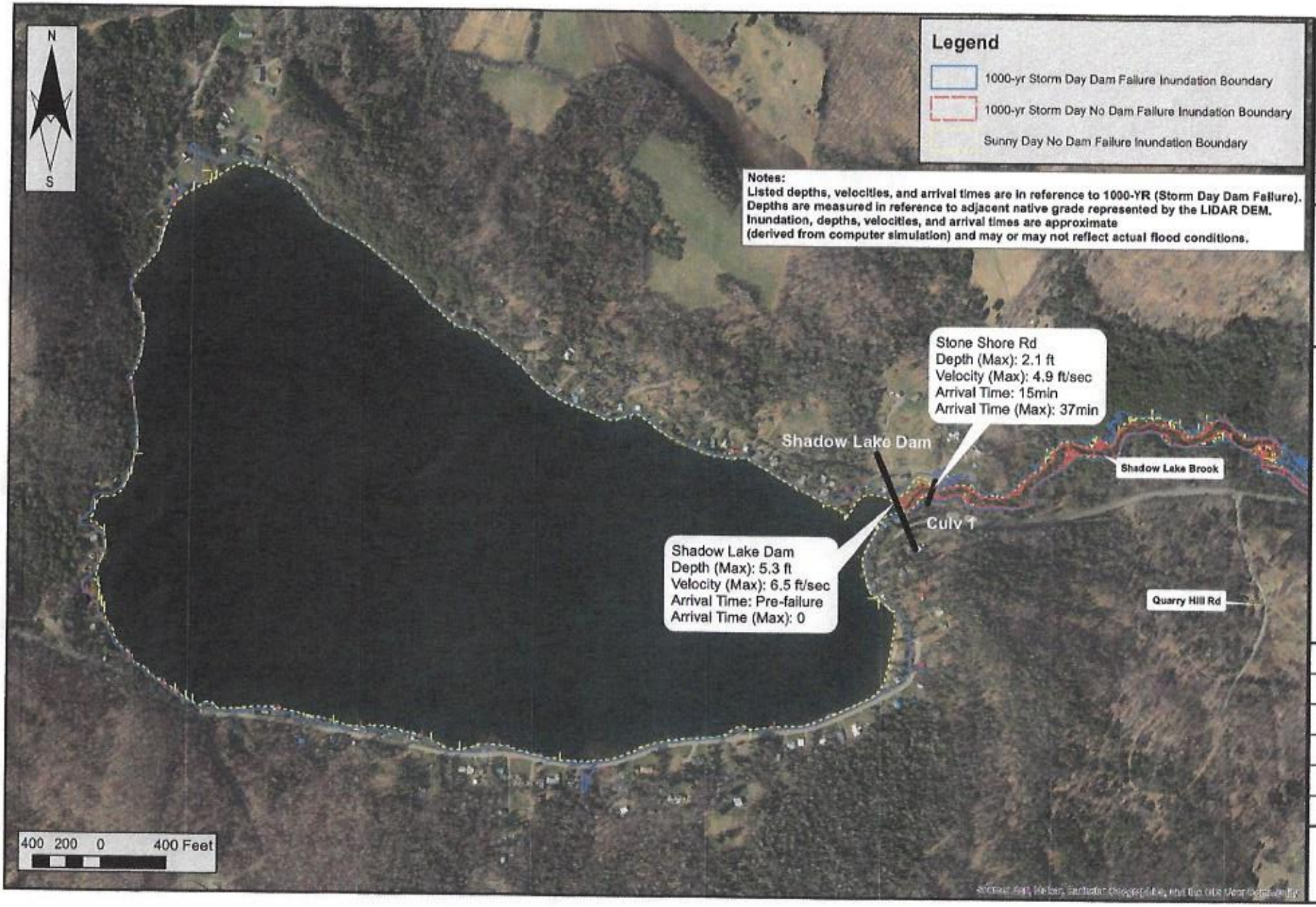
CHECKED BY:	
PROJECT NO:	127862L1
DATE:	01/30/2023
FIGURE NO:	INDEX



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INUNDATION MAP
SHADOW LAKE DAM PROJECT

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PROJECT NO:	127862L1
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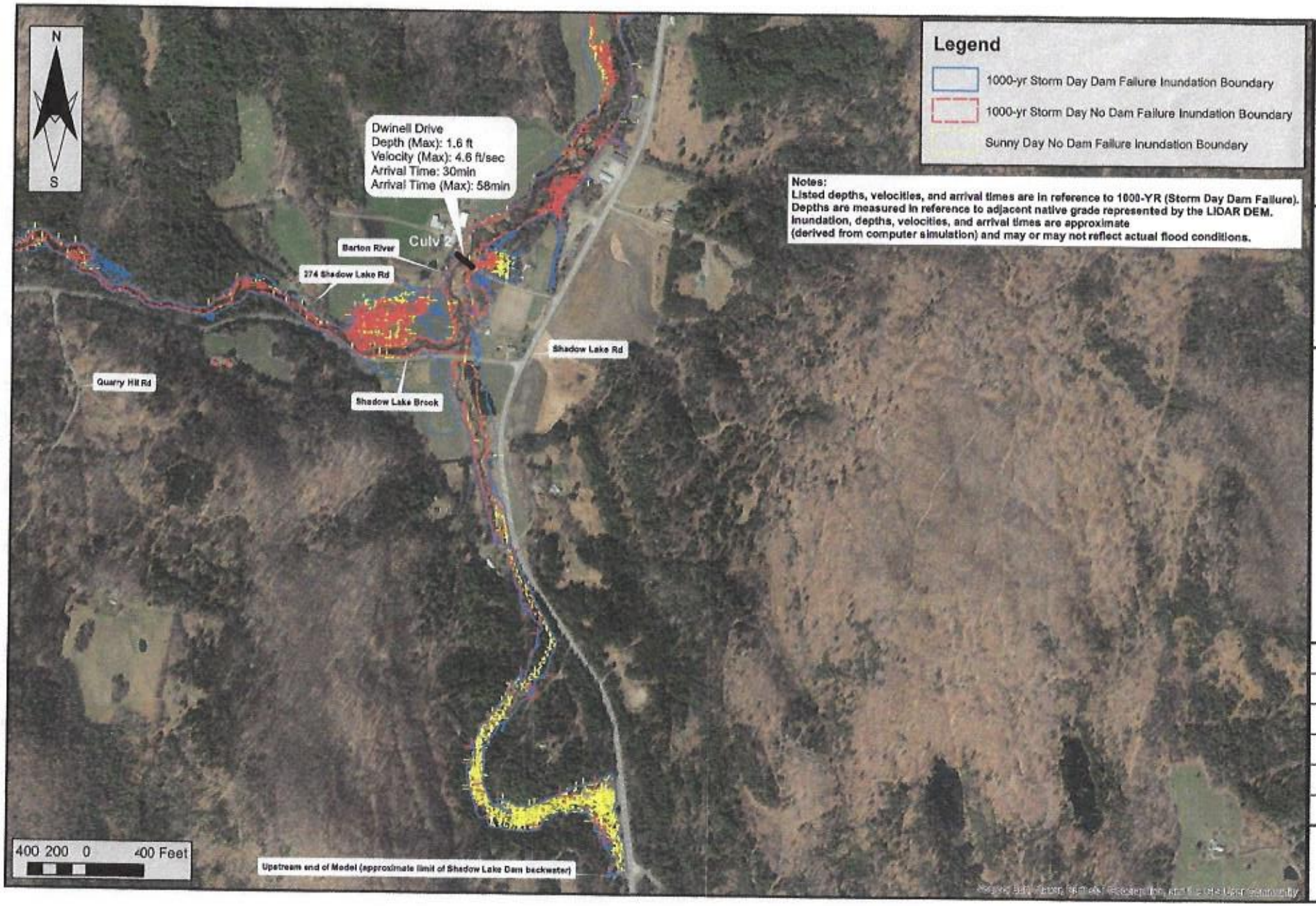

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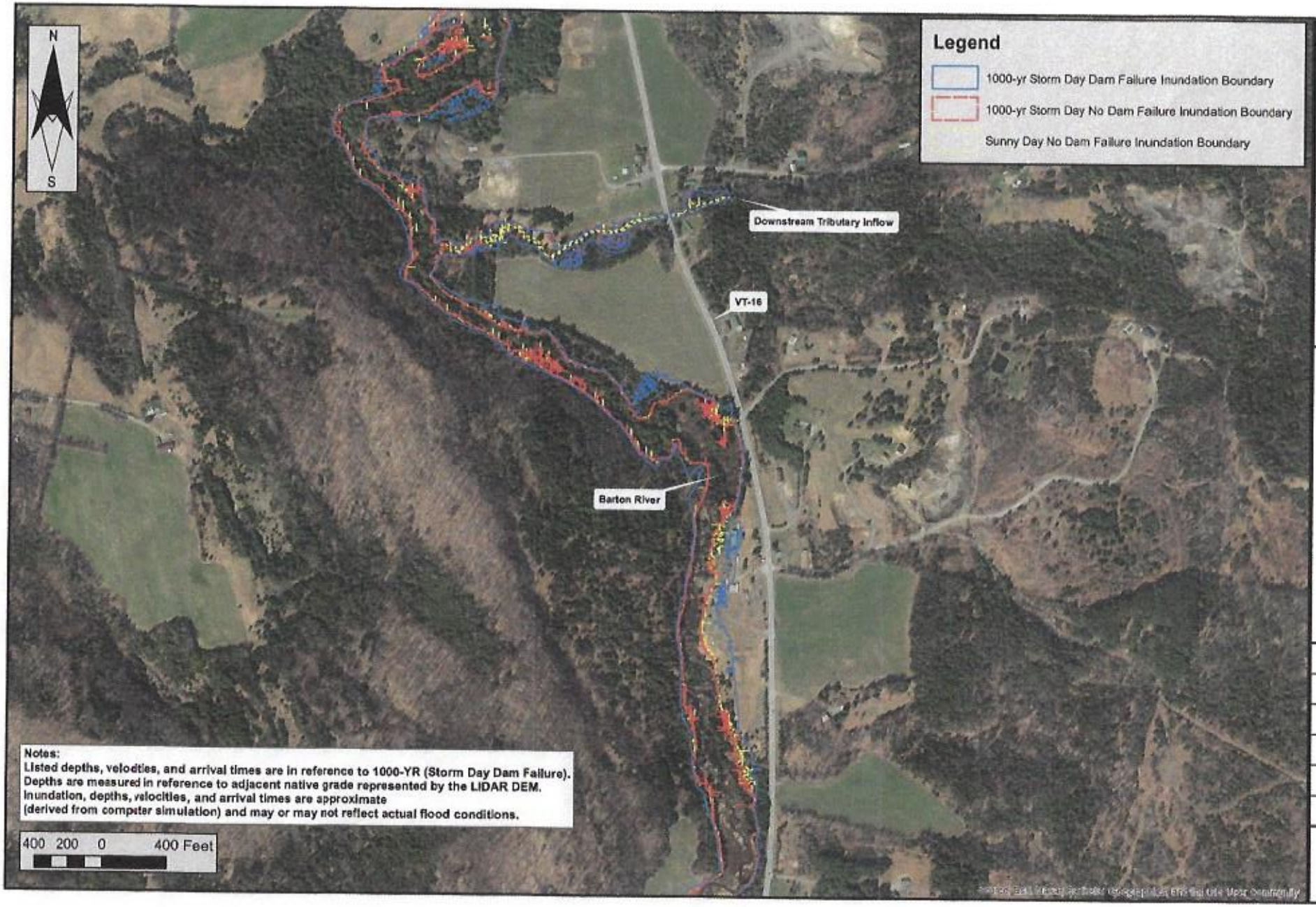

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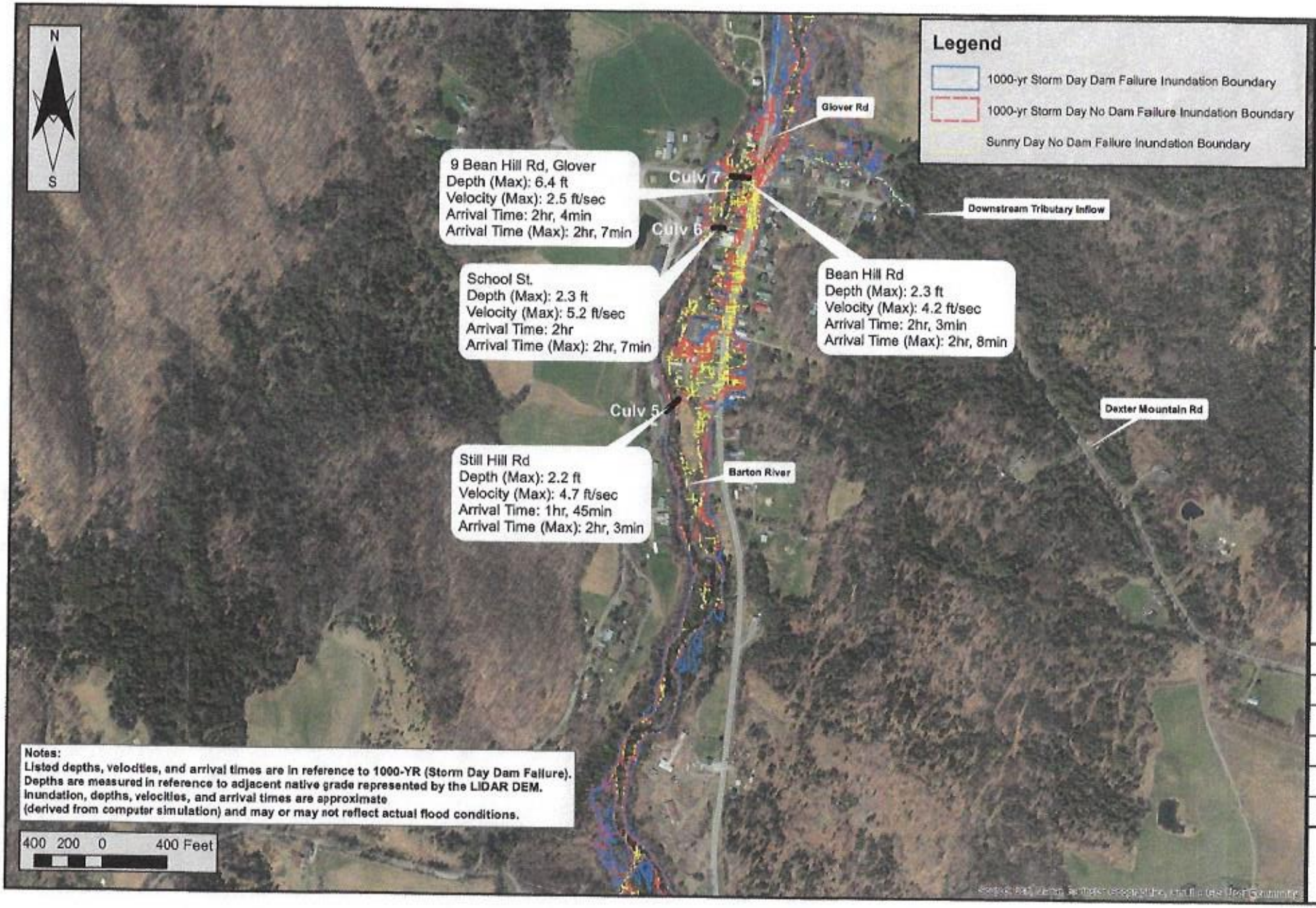

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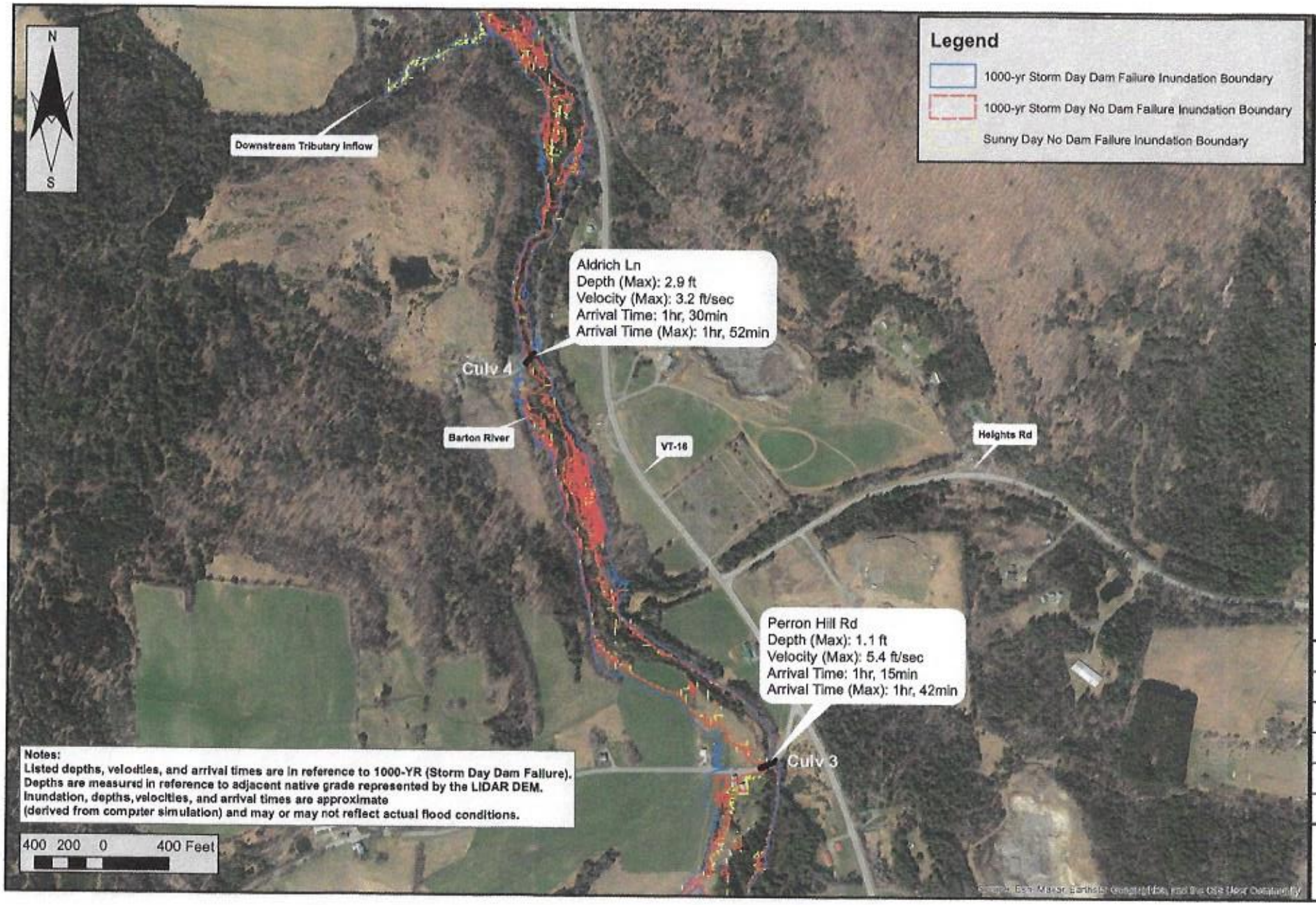

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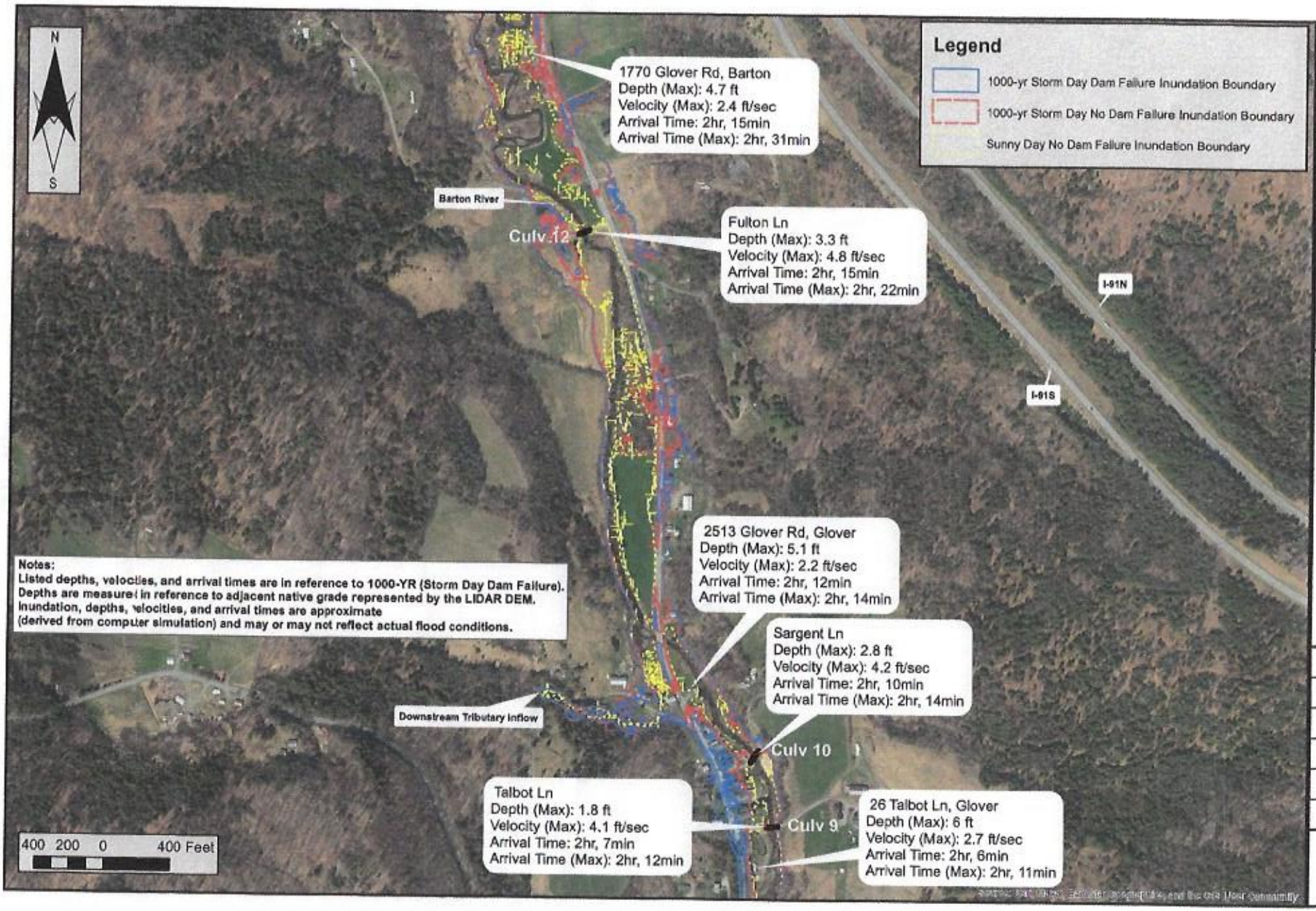

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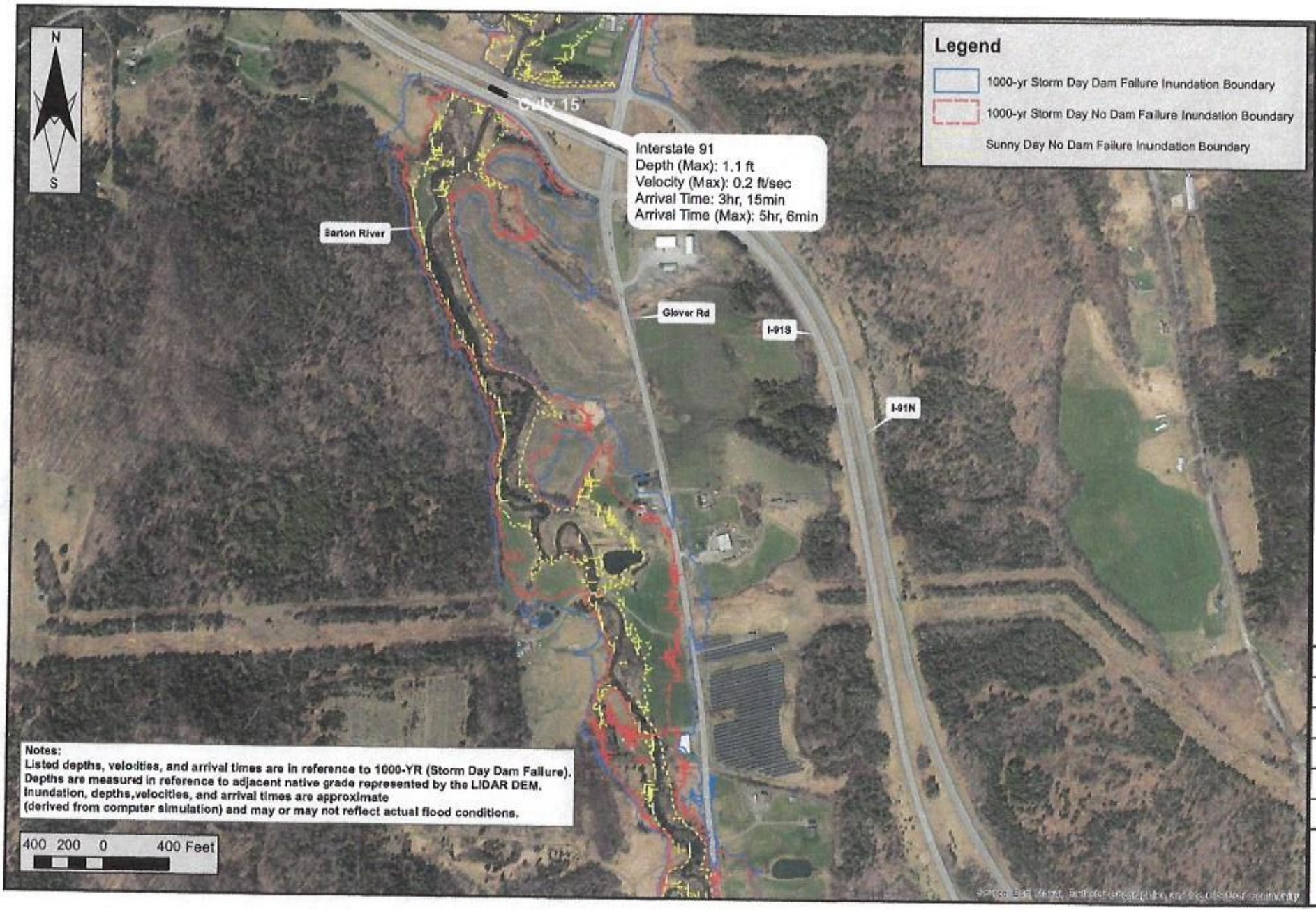

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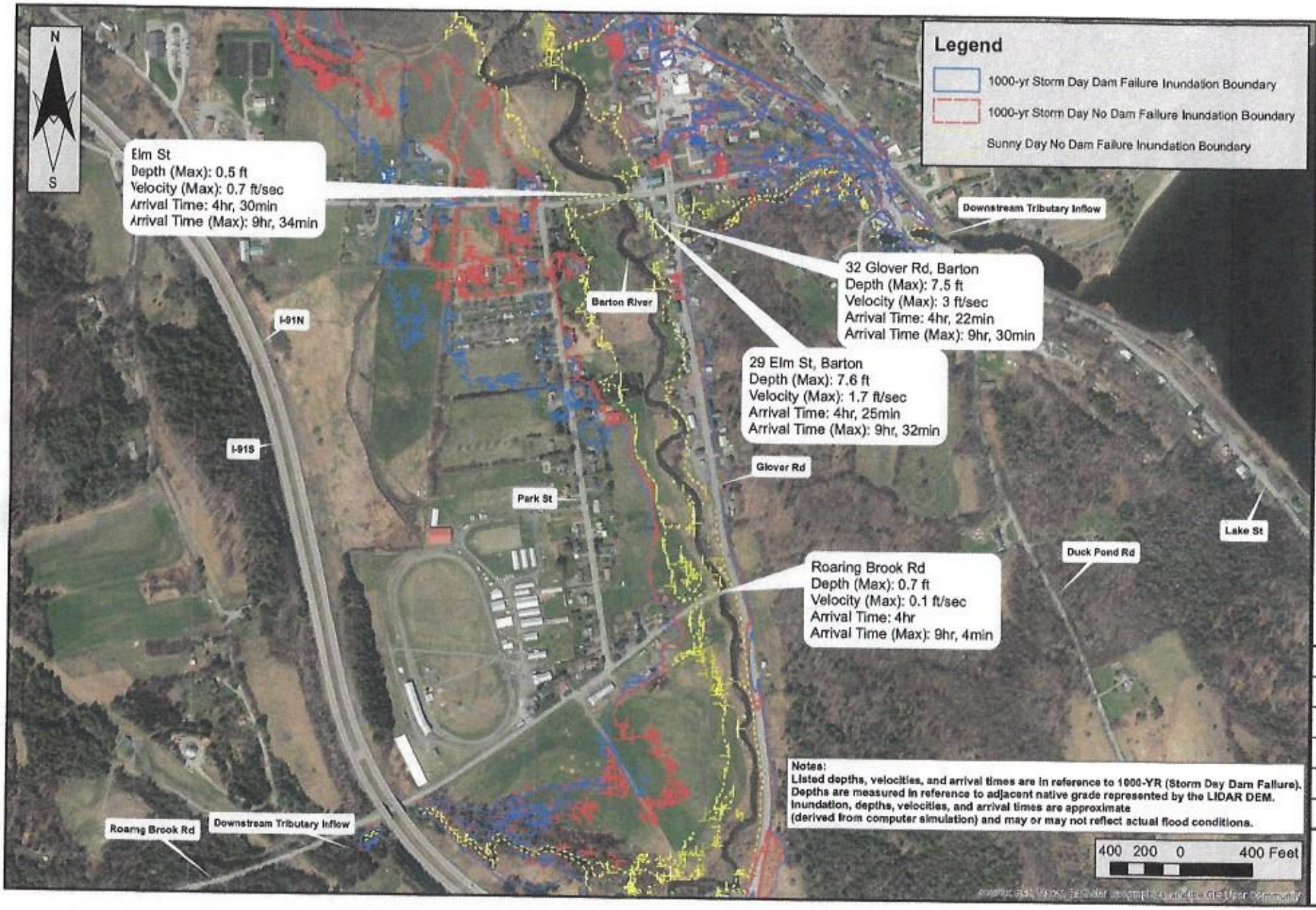

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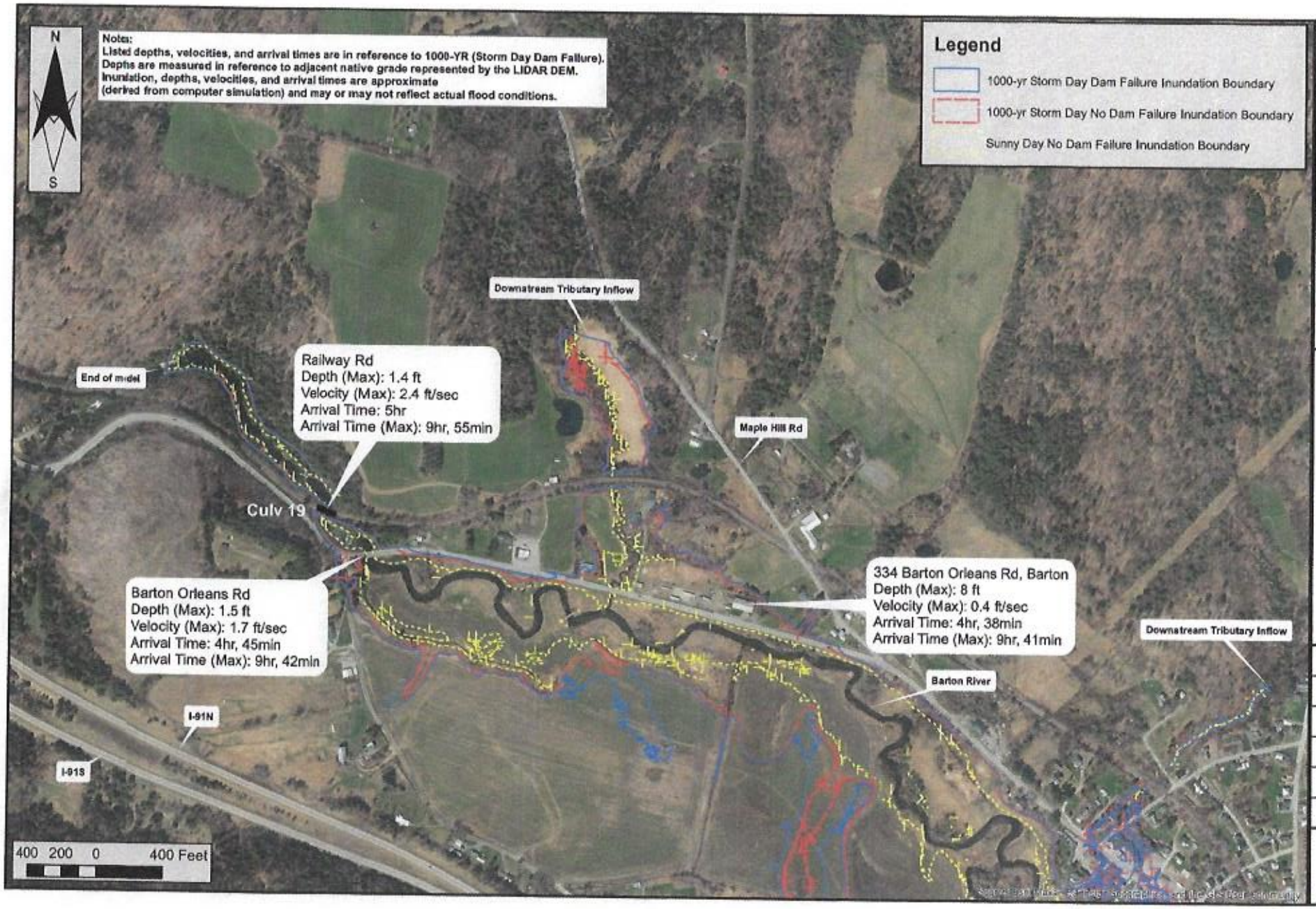

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