Paul Stoutenburgh Preserve Restoration Studies Stakeholder Update

May 26, 2023

Project Progress Summary

- Project Kickoff/Site Visit on 11/3/22
- Installation of Water Level Monitors 11/4/22 – 12/1/22
- LIRR Culvert Cleaning 11/13/22
- Elevation Surveys 11/28/22
- Wetland Delineation Field Surveys 11/19 & 22/22
- Water Level and Salinity Field Measurements 1/30-31/2023
- Collection of Historical Information
- Assessment of the Repair/Replacement of Culverts
- Assessment of Freshwater Flow Characteristics

History of Hydrologic Impacts

- LIRR grade established across tidal wetlands in late 1860s
- Old Route 25 Constructed in 1930s
- Current Route 25 Constructed in Late 1950s


Long Creek
Pond
ISLAND
LAUREL
AVE
LONG
Mill Cr
Budds
Pond
16
20
10
5
30
2
3
4
10
8
6


Hashamomuck Pond
Wetland Trail Crossing
Vernal Pools
LIRR Culvert 1
Main Road Culvert
Source Channel
Old Main Road Culvert
Old Main Road
LIRR
Rt 25
Mill Creek Channel
LIRR Culvert 2


Source Channel from Mill Creek

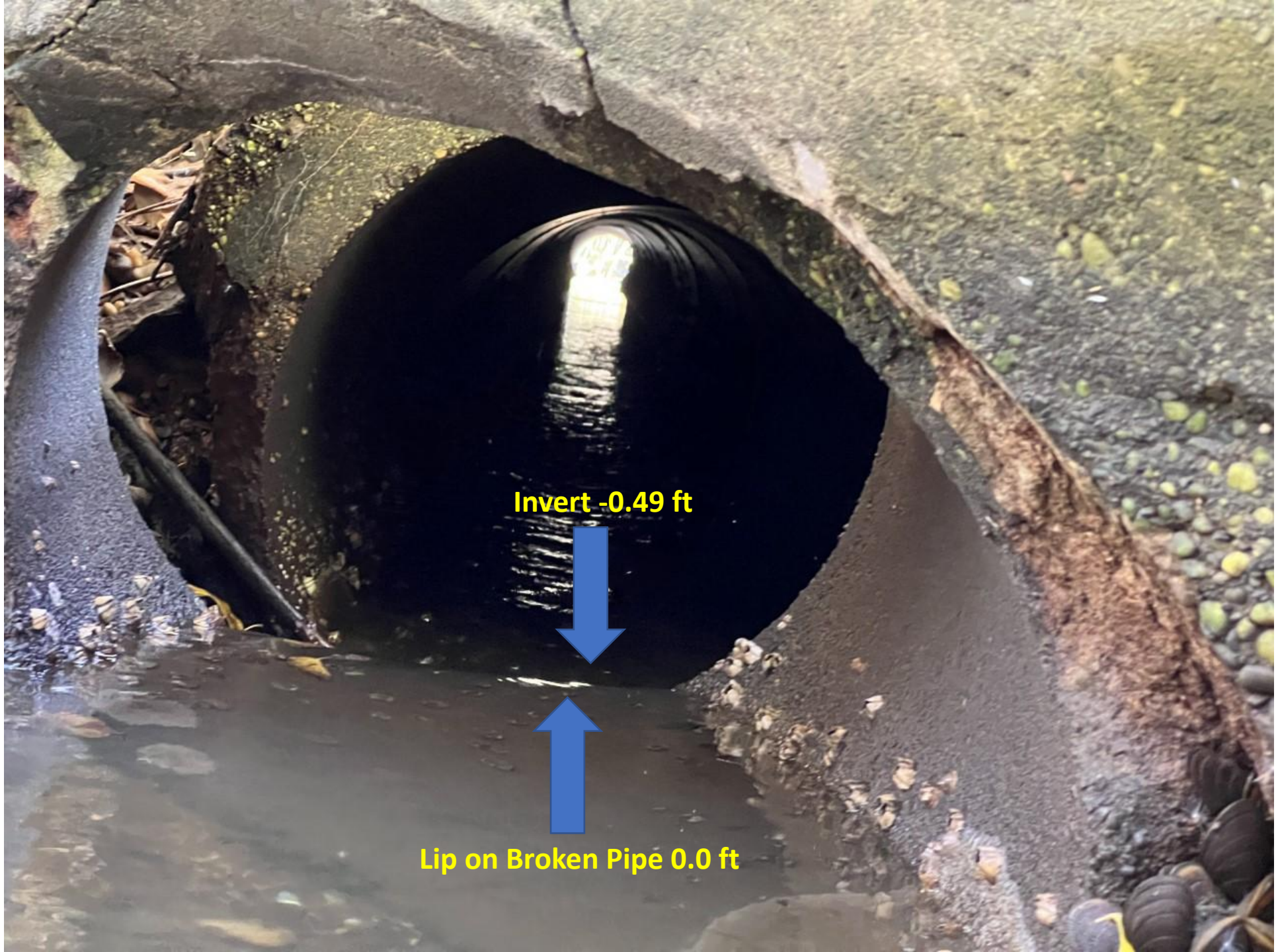

Old Main Road Culvert - South


Old Main Road Culvert - North


Main Road (Rt 25) Culvert South


Main Road (Rt 25) Culvert - North


Top View


Invert -0.49 ft
Lip on Broken Pipe 0.0 ft

Tidal Wetland between Main Road and LIRR

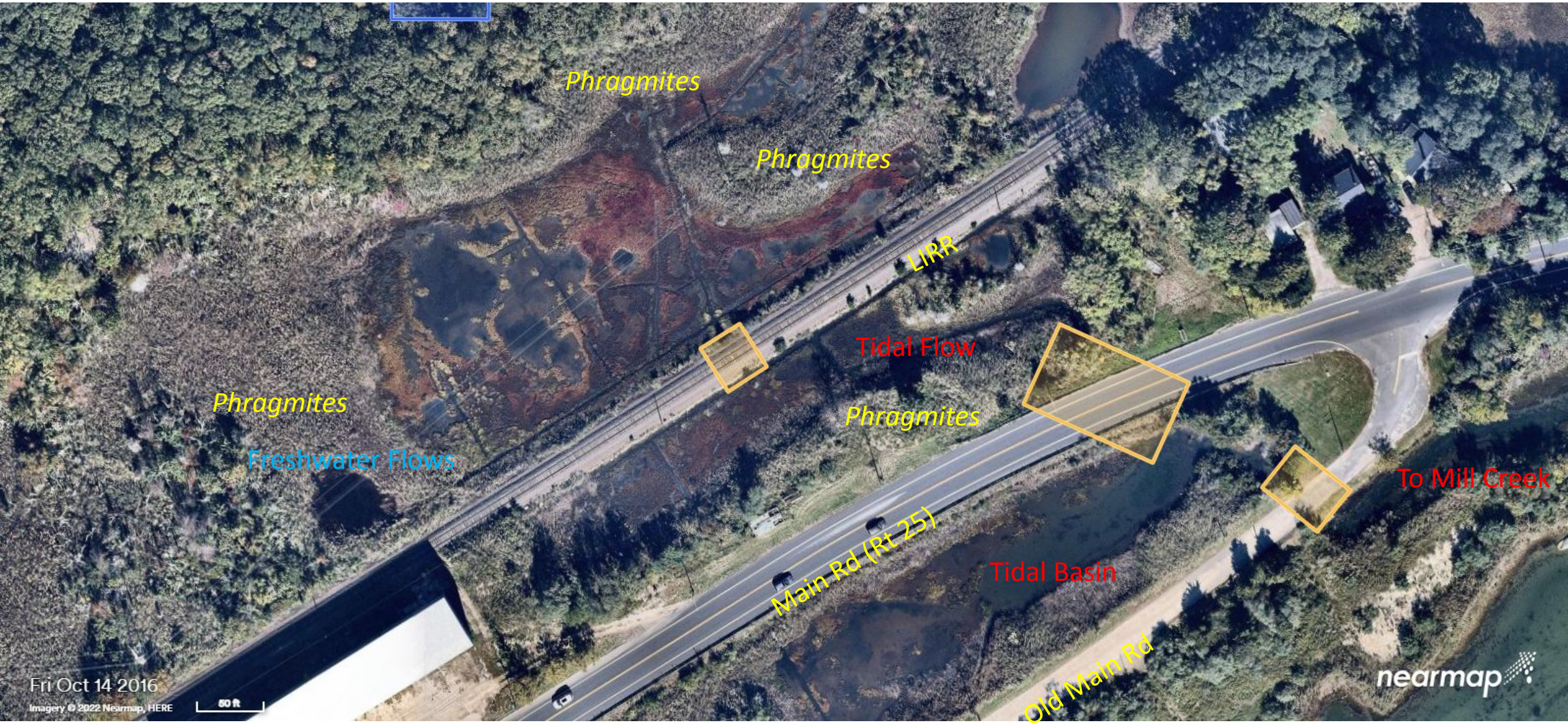

LIRR Culvert - South


LIRR Culvert - North


LIRR Culvert at Albertson Marine - North

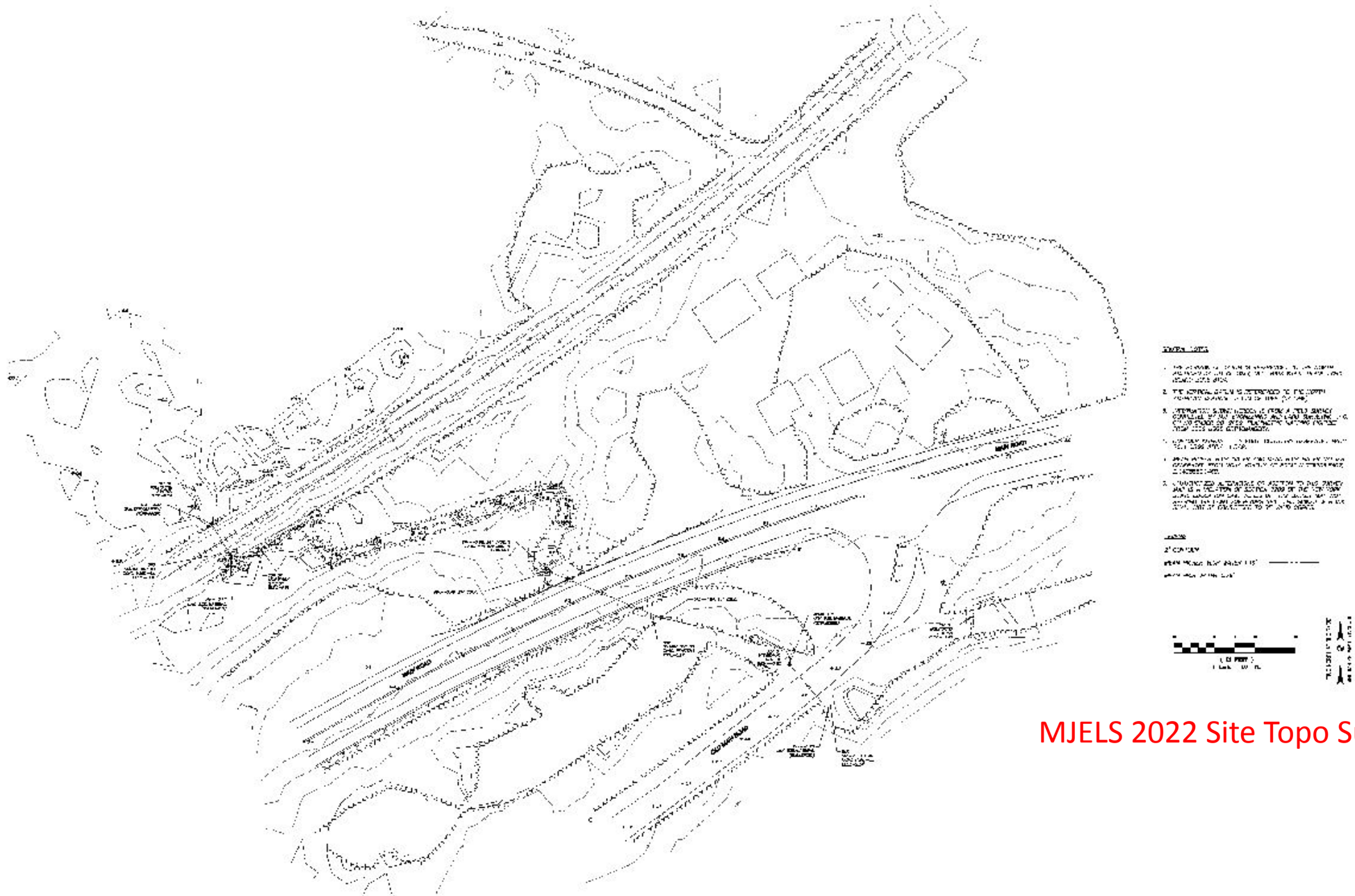

LIRR Culvert at Albertson Marine - South


PSP Tidal Wetland
Phragmites
Predominantly High Marsh

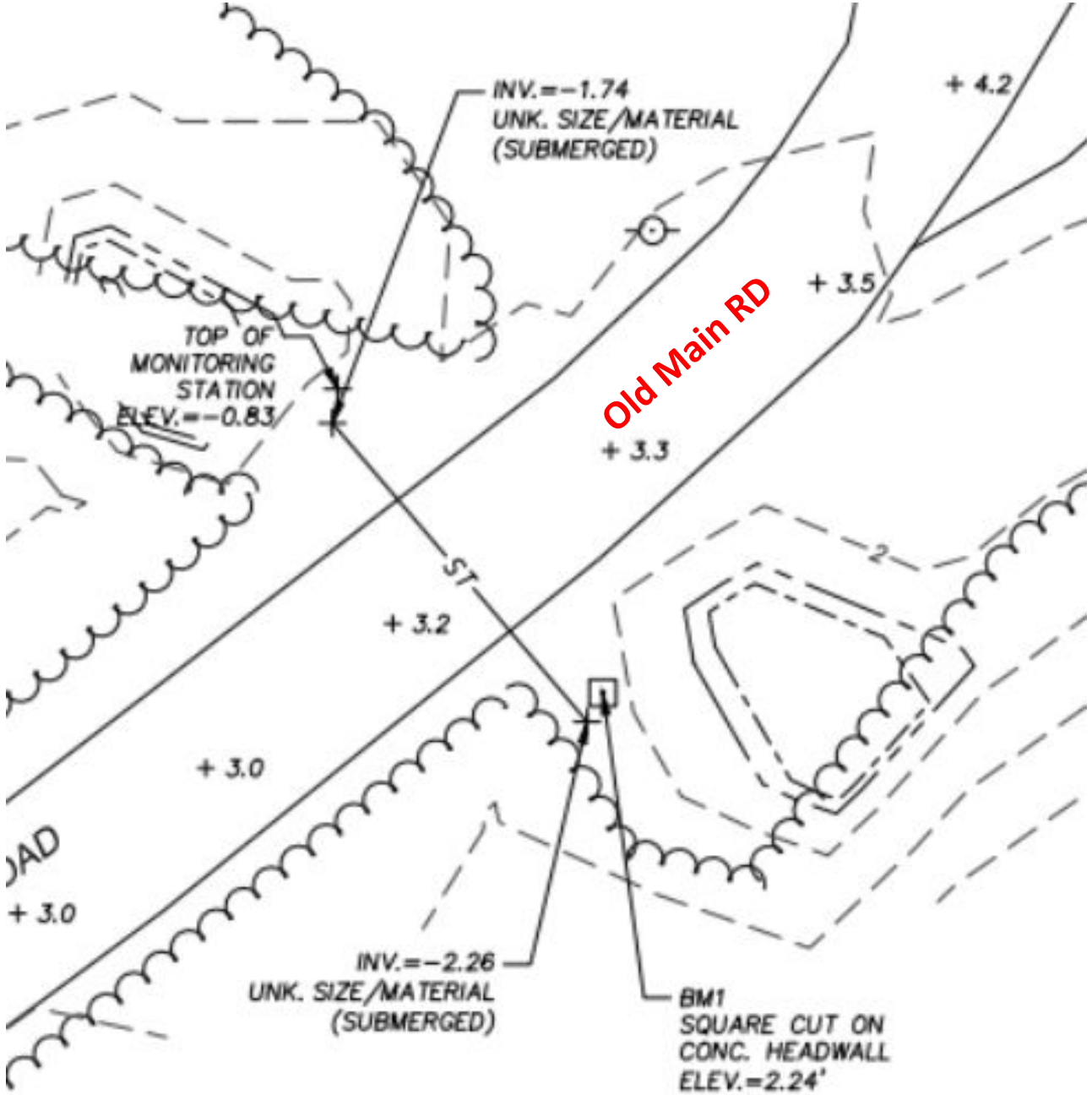

Phragmites
Phragmites
LIRR
Tidal Flow
Phragmites
Phragmites
Freshwater Flows
To Mill Creek
Main Rd (Rt 25)
Tidal Basin
Old Main Rd
Fri Oct 14 2016
Imagery © 2022 Nearmap, HERE
50 ft
nearmap


Wed Nov 19 2014
100 ft
Imagery © 2023 Nearmap, HERE
nearmap

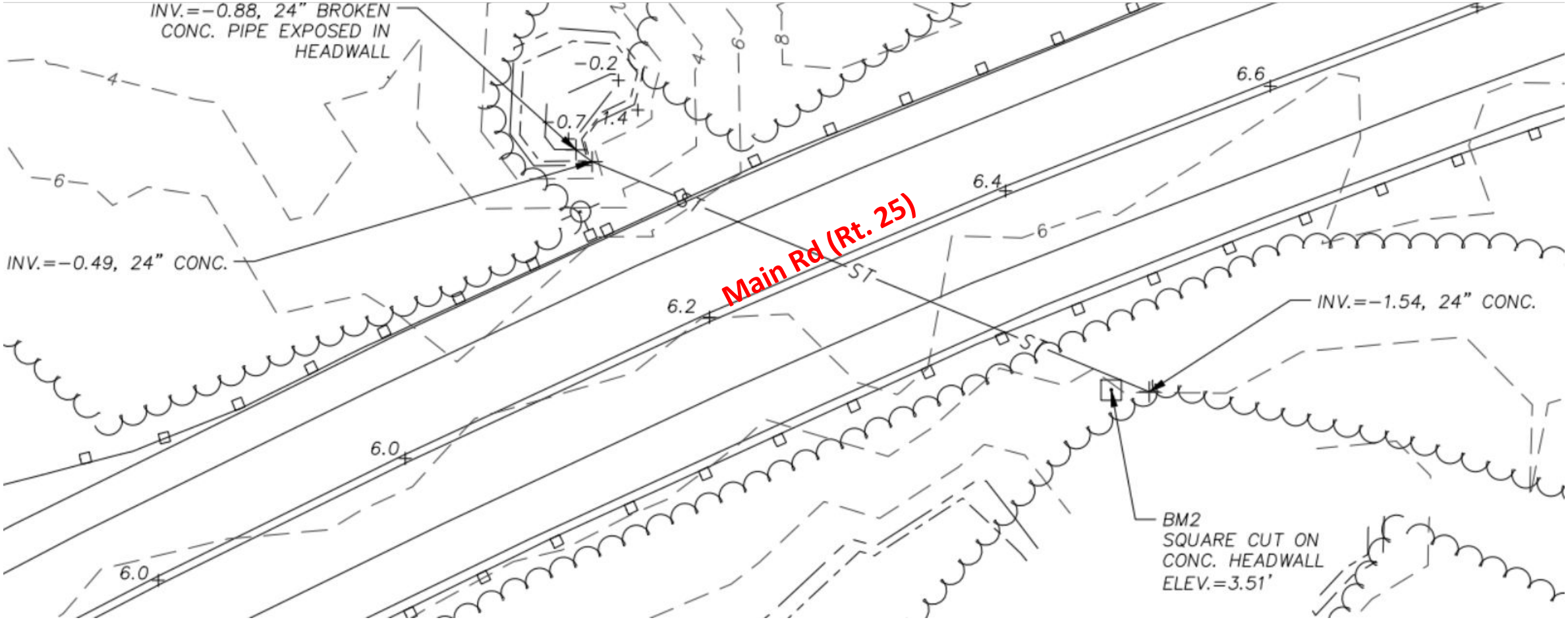

Wed Jul 20 2022
Imagery © 2023 Nearmap, HERE
100 ft
nearmap



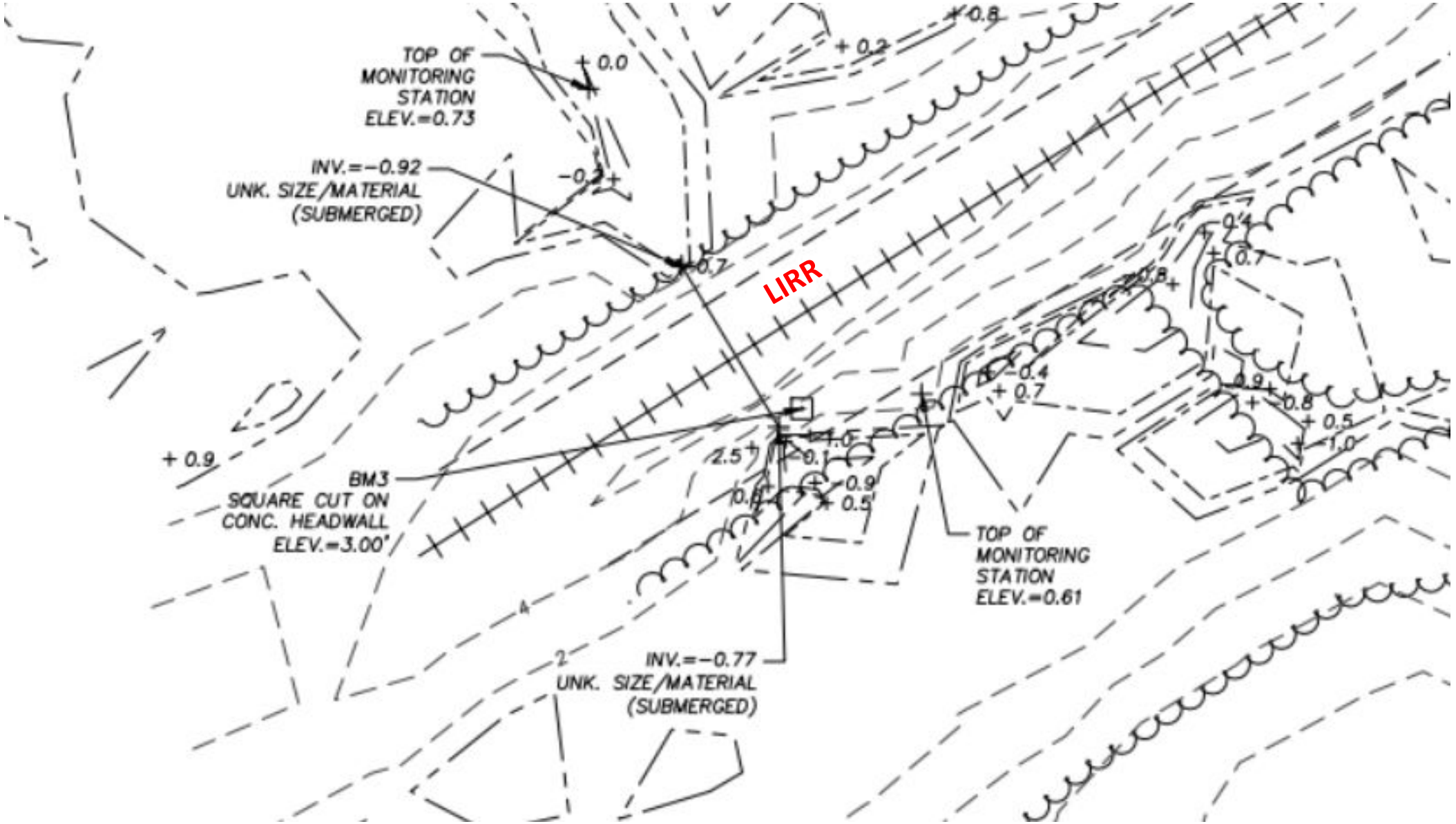
MJELS 2022 Site Topo Survey



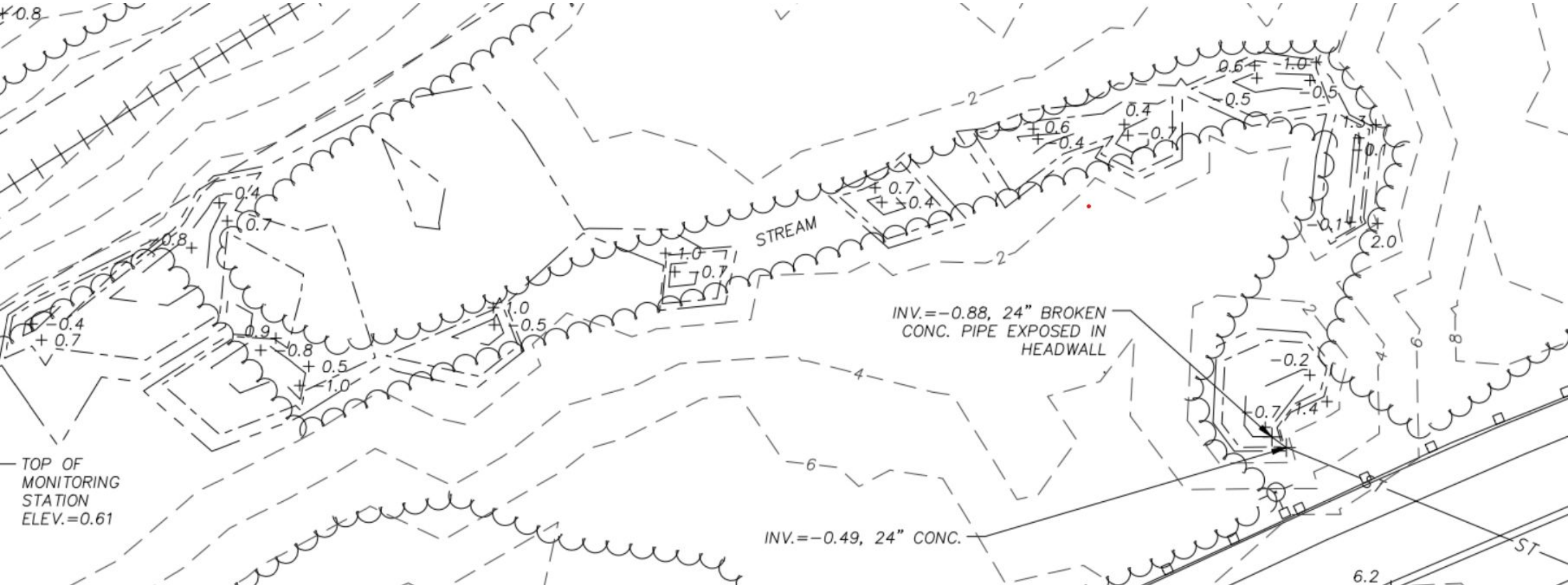
OLD MAIN ROAD CULVERT AREA



ROUTE 25 CULVERT AREA



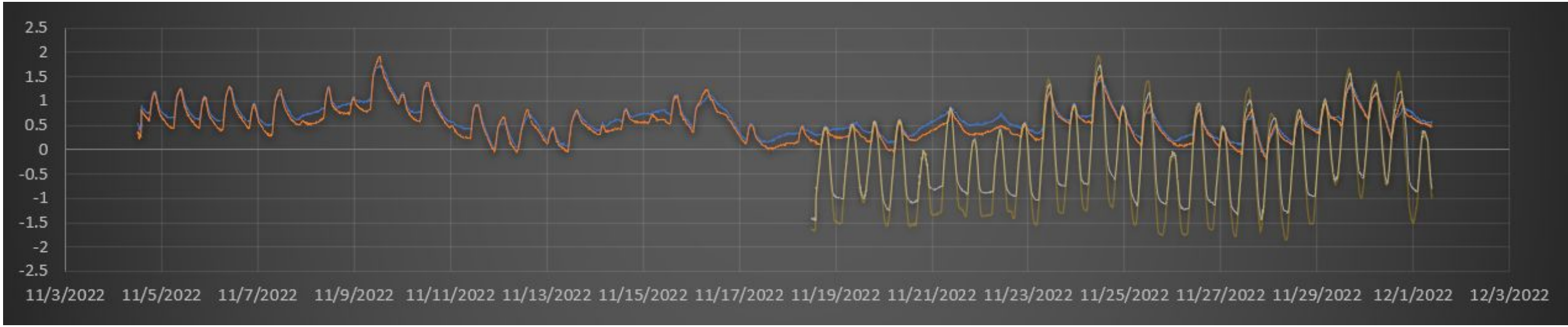
LIRR CULVERT AREA



Channel Elevations between Old Main Road and Rt 25

November 2022 Tidal Monitoring

<u>Tidal Monitoring Stations</u>
S1 – PSP Wetland
S2 – LIRR South
S3 – Rt 25/Old Rt 25
S4 – Tidal Channel


2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
11/3/2022
11/5/2022
11/7/2022
11/9/2022
11/11/2022
11/13/2022
11/15/2022
11/17/2022
11/19/2022
11/21/2022
11/23/2022
11/25/2022
11/27/2022
11/29/2022
12/1/2022
12/3/2022

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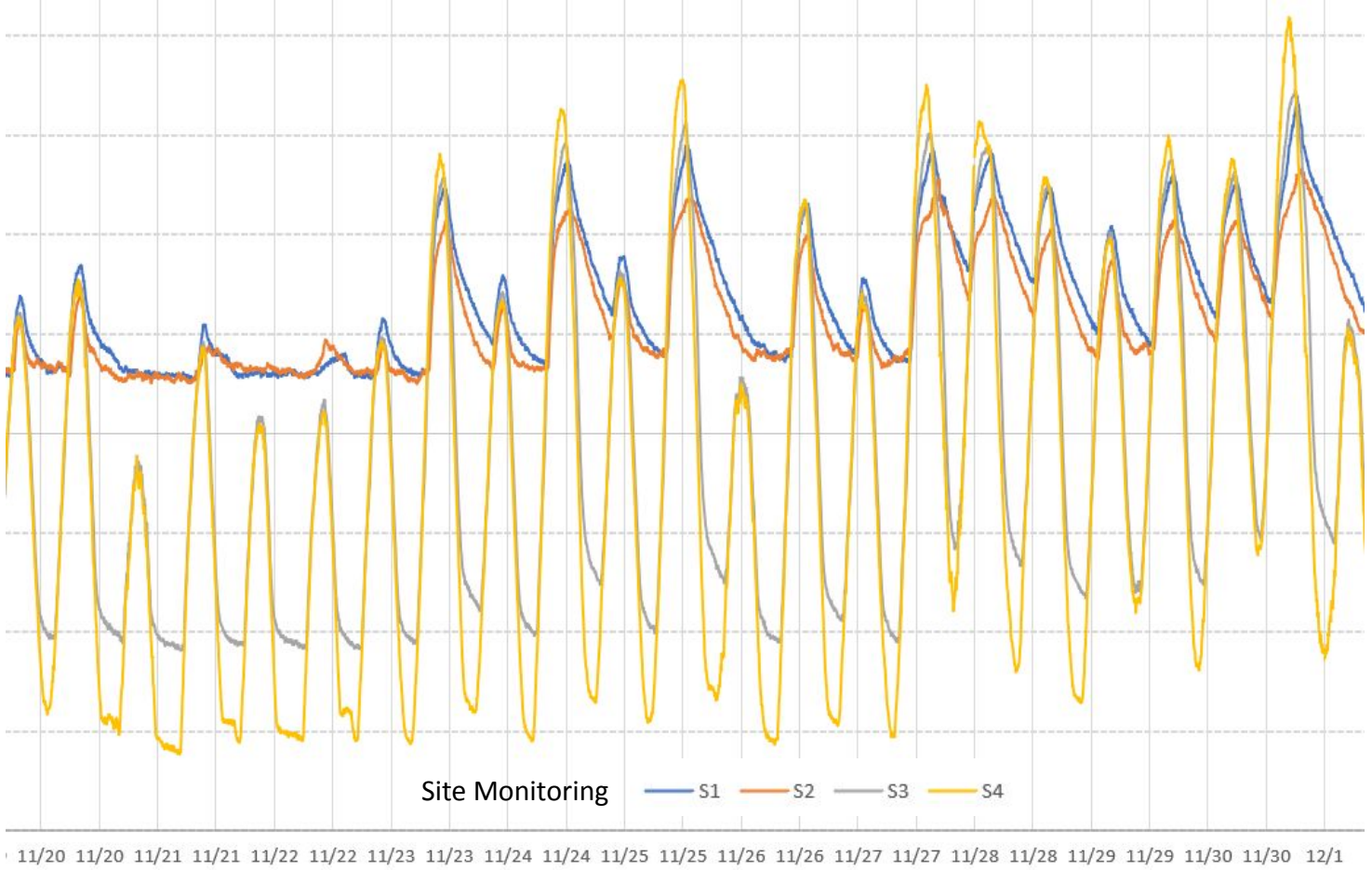

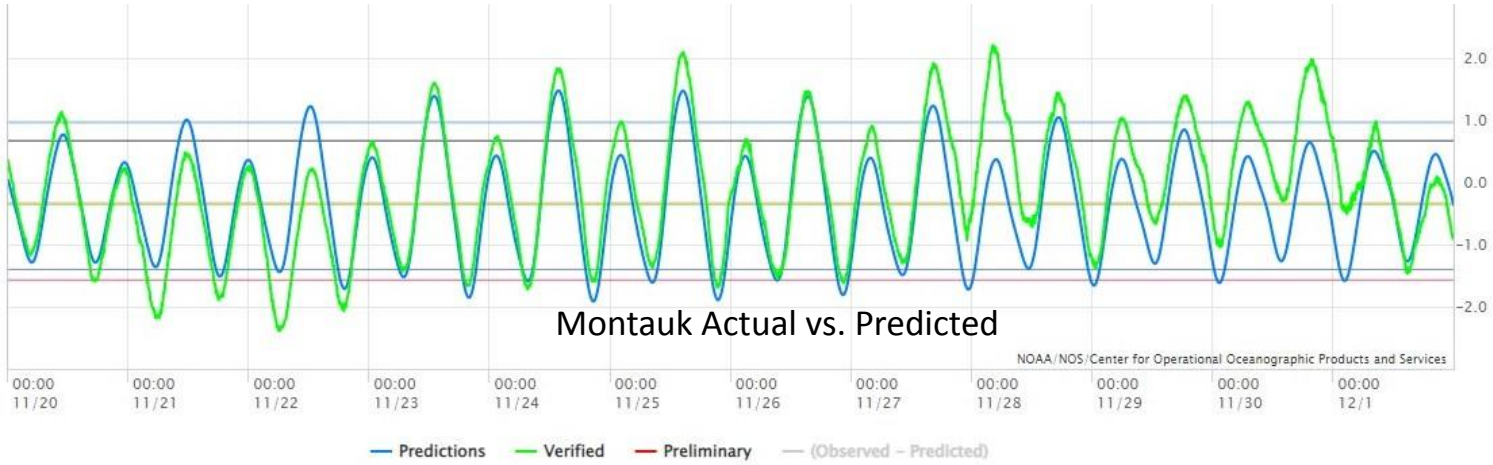

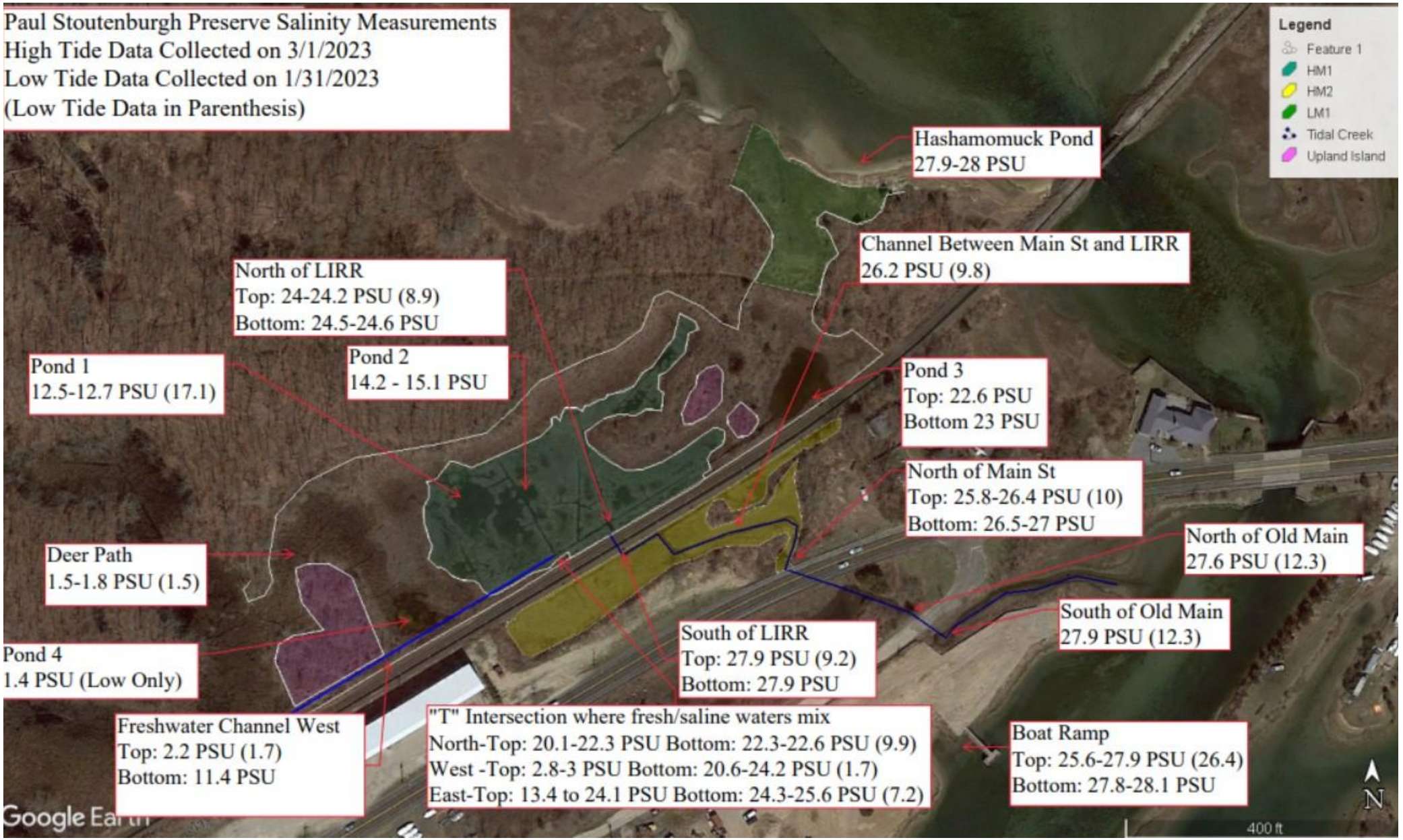
Paul Stoutenburgh Preserve Salinity Measurements
High Tide Data Collected on 3/1/2023
Low Tide Data Collected on 1/31/2023
(Low Tide Data in Parenthesis)
Legend
Feature 1
HM1
HM2
LM1
Tidal Creek
Upland Island
Hashamomuck Pond
27.9-28 PSU
Channel Between Main St and LIRR
26.2 PSU (9.8)
North of LIRR
Top: 24-24.2 PSU (8.9)
Bottom: 24.5-24.6 PSU
Pond 1
12.5-12.7 PSU (17.1)
Pond 2
14.2 - 15.1 PSU
Pond 3
Top: 22.6 PSU
Bottom 23 PSU
North of Main St
Top: 25.8-26.4 PSU (10)
Bottom: 26.5-27 PSU
North of Old Main
27.6 PSU (12.3)
Deer Path
1.5-1.8 PSU (1.5)
South of Old Main
27.9 PSU (12.3)
South of LIRR
Top: 27.9 PSU (9.2)
Bottom: 27.9 PSU
Pond 4
1.4 PSU (Low Only)
Freshwater Channel West
Top: 2.2 PSU (1.7)
Bottom: 11.4 PSU
"T" Intersection where fresh/saline waters mix
North-Top: 20.1-22.3 PSU Bottom: 22.3-22.6 PSU (9.9)
West -Top: 2.8-3 PSU Bottom: 20.6-24.2 PSU (1.7)
East-Top: 13.4 to 24.1 PSU Bottom: 24.3-25.6 PSU (7.2)
Boat Ramp
Top: 25.6-27.9 PSU (26.4)
Bottom: 27.8-28.1 PSU
Google Earth
400 ft
N

Route 25 Culvert Update

Freshwater Drainage Update

Summary of Findings to Date

- Culverts between Mill Creek and tidal wetland in SW area of PSP of various ages and conditions
- North side of Rt 25 culvert in state of failure and may be restricting inflows/outflows
- Tidal prism is reaching PSP tidal wetland, resulting in high water levels equivalent to Mill Creek on higher high tides/storm tides
- Water elevations on high tides on north side of railroad grade are slightly higher than on the south side
- Outflow from PSP wetland limited by downgradient channel elevations and failed Rt 25 culvert headwall.
- Tidal wetland within PSP des not fully drain on low tides; has limiting effect on wetland plant growth.
- Salinity within channels leading to PSP wetland reflect adjacent Mill Creek/Shelter Island Sound
- Salinity within PSP tidal wetland highly variable due to significant freshwater inflow from adjacent watershed and evaporation from ponded areas.

Conclusions and Options to Consider

- Immediate repair of north side of Rt 25 culvert recommended.
- LIRR culvert maintenance important to provide full flow capacity between PSP wetlands and tidal channel to south
- Current opinion is that increasing size of Old Main Road, Main Road and LIRR culverts will not significantly increase tidal prism in PSP wetland
- Freshwater inflow is reducing salinity and creating opportunity of *Phragmites* to maintain dominance in western herbaceous wetland and forest perimeter areas
- Diversion of freshwater flows to western LIRR culvert would likely increase salinity in some areas of PSP tidal wetland
- High water levels in PSP tidal wetland are likely to be preventing spread of *Phragmites* over larger area
- Providing for more complete drainage by lowering channel elevations and culvert inverts could lead to lower water levels in PSP wetland and encourage *Phragmites* growth.
- Further consideration can be given to option of establishing tidal channel from PSP wetland to Hashamomuck Pond. Permitting issues and effectiveness to be considered……..