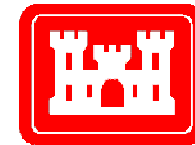


Restoring Wreck Pond Inlet

Jenna Krug, Habitat Restoration Coordinator



Borough of Spring Lake
Borough of Sea Girt

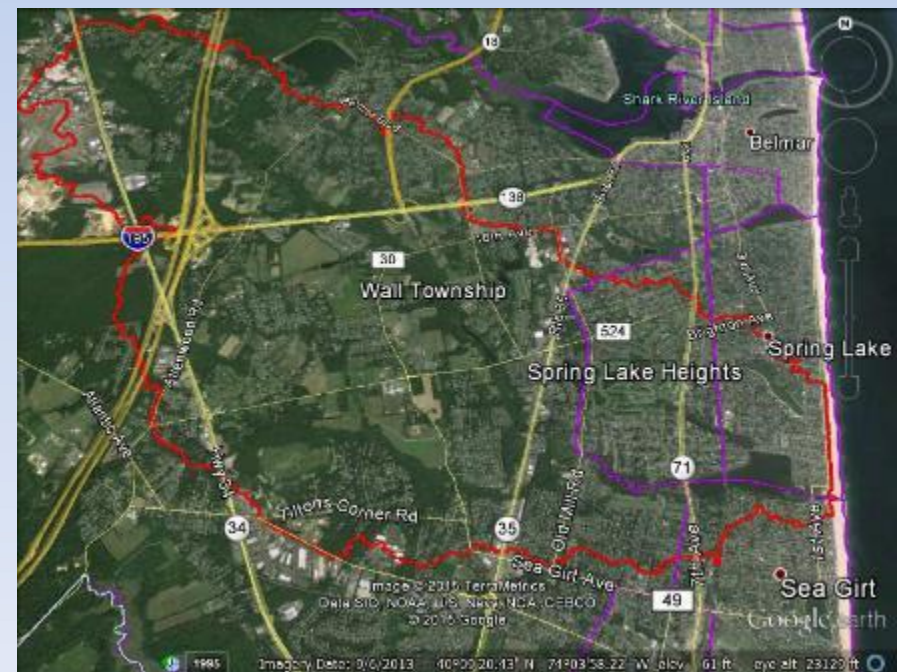


US Army Corps
of Engineers®

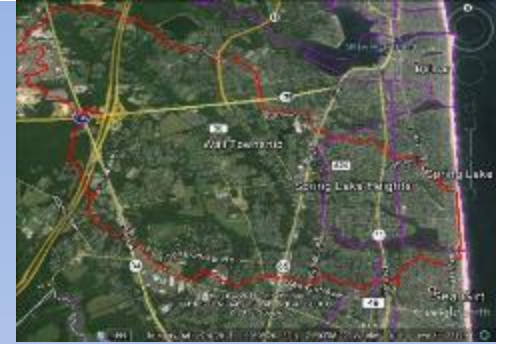


Project Location: Wreck Pond Watershed

- ~12.8 square miles (8,172 acres)
- Drains the following municipalities:
 - Borough of Spring Lake Heights
 - Borough of Spring Lake
 - Borough of Sea Girt
 - Wall Township



Project Location: Wreck Pond Watershed



- Three major tributaries:
 - Wreck Pond Brook (approx. 8 RKM)
 - Splits into a fourth tributary in upper watershed
 - Hurley’s Pond Brook (approx. 1.5 RKM)
 - Hannabrand Brook (approx. 5 RKM)
 - Black Creek (approx. 2 RKM)



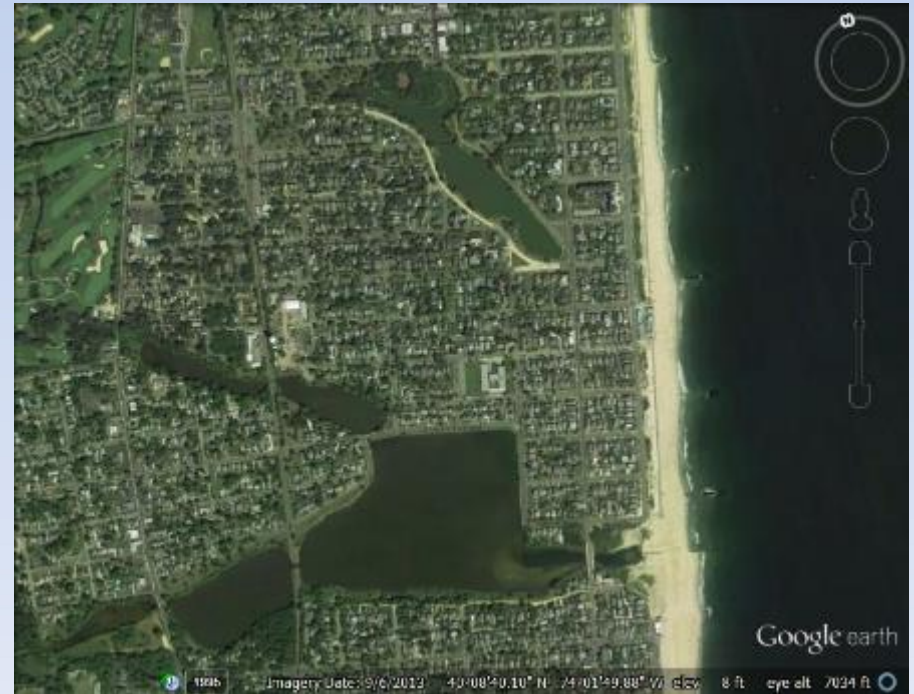
Project Location: Wreck Pond

- Straddles Boroughs of Spring Lake and Sea Girt, NJ
- 73-acre tidally-influenced coastal pond

1920's



September 2013



Current Issues

- Limited Fish Passage Opportunities
- Repeated Flooding
- Impaired Water Quality





Current Issues: Fish Passage

- Limited Fish Passage Opportunities
 - Alewife, Blueback herring, American eels
 - Current pipe was not designed for fish passage



River herring migrating



River herring:
Alewife and Blueback



Current Issues: Flooding

Hurricane Irene
08-27-2011 to 08-28-2011
7.26" total rainfall



12-26-2012 to 12-27-2012
3.32" total rainfall
AM high tide – 7.70'



07-13-2014 to 07-16-2014
6.98" total rainfall



Current Issues: Flooding



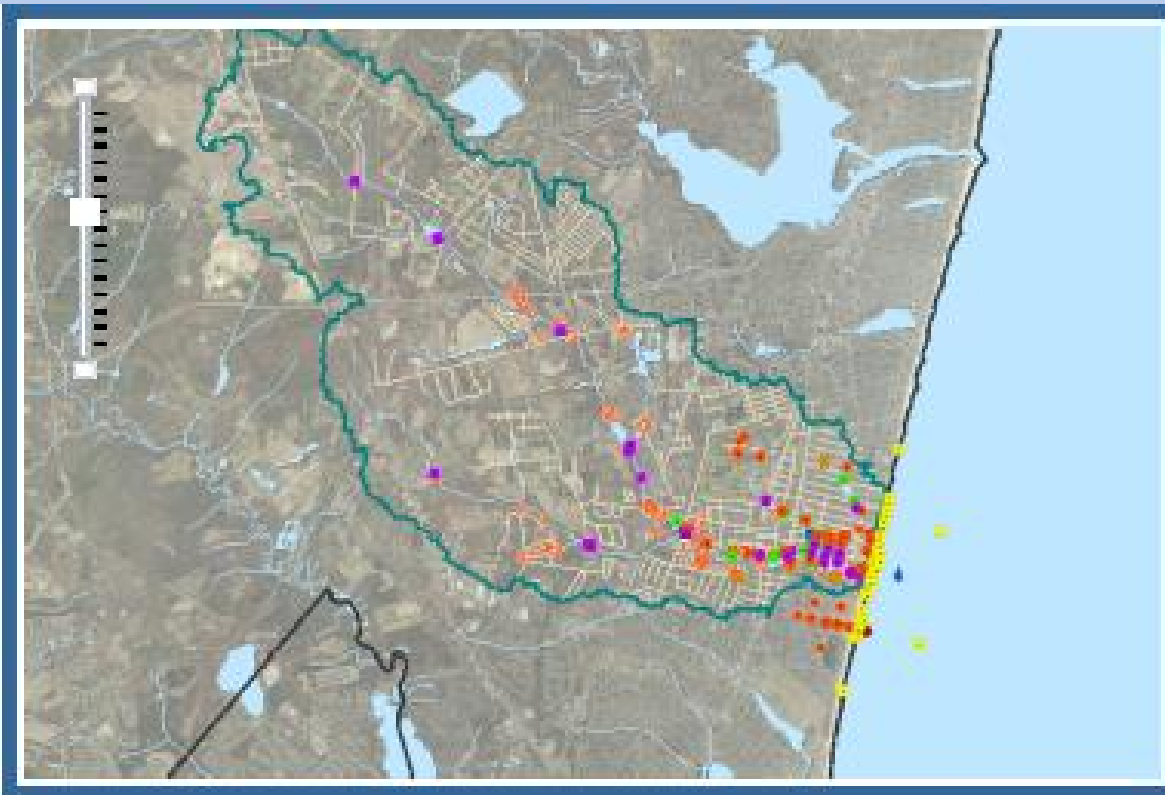
- **Tidal Flooding - 1944-2014 Historic Crests (57 total) -**
http://water.weather.gov/ahps2/crests.php?wfo=phi&gage=sdhn4&crest_type=historic
- 1944-2000 = 36 historic crests over 56 years
 - (63%; average 0.64 historic crests per year)
- 2001-2014 = 21 historic crests over 14 years
 - (37%; average 1.5 historic crests per year)
- Major tidal flooding – 8.7’
 - 12 historic crests were at or above 8.7’
 - 2 of those occurred since 2000
- Moderate tidal flooding – 7.7’
 - 43 historic crests were between 7.7’ and 8.7’
- Minor tidal flooding – 6.7’
 - 2 historic crests were between 6.7’ and 7.7’





Current Issues: Water Quality

- Stormwater runoff, sedimentation, tidal constriction



How are these issues being addressed?

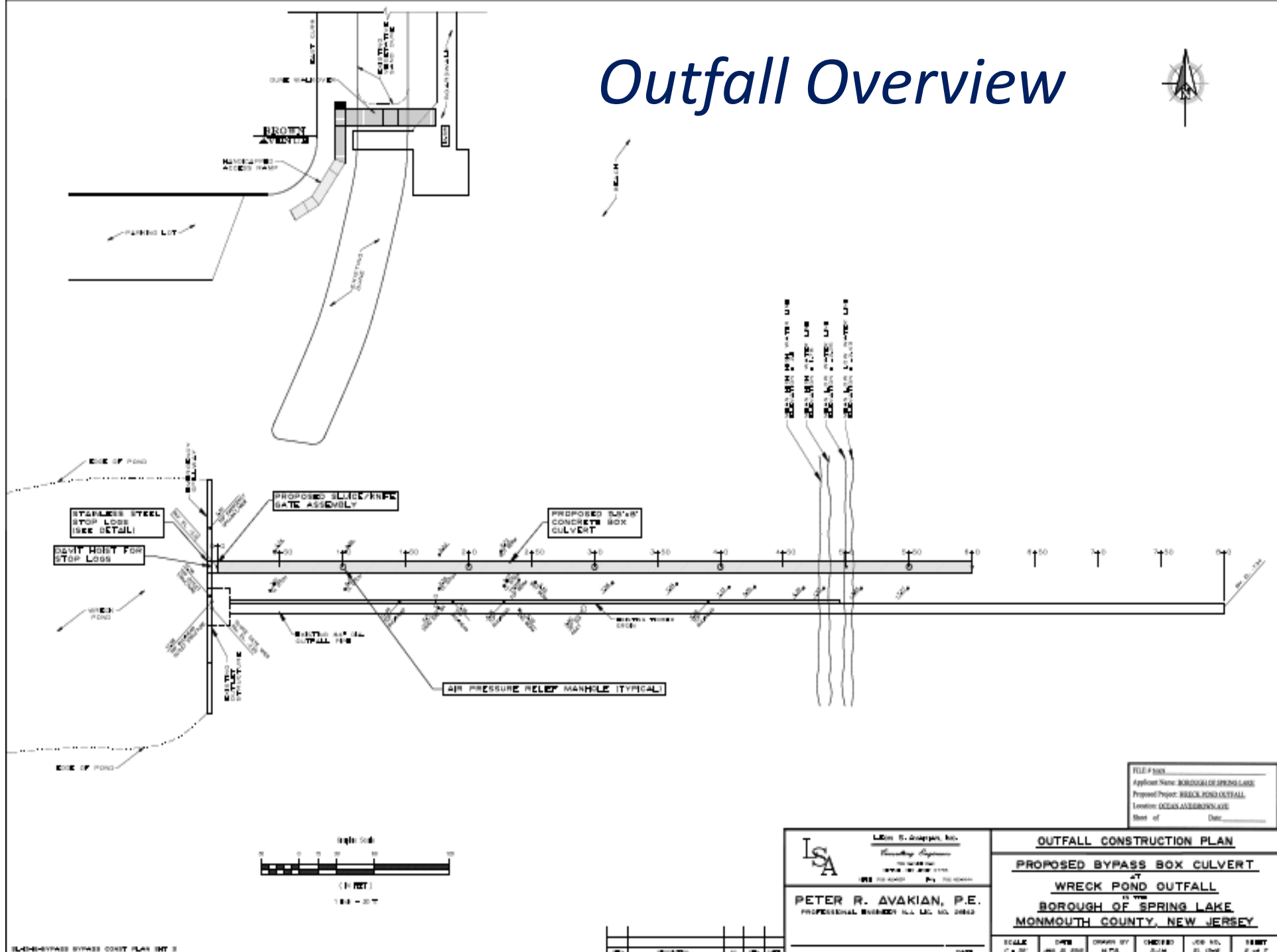
- Restore Wreck Pond Inlet Project
- Installation of a 5.5' x 8' x 600' box culvert just north and parallel to the existing 84" diameter 800' pipe



Funding



Outfall Overview



FILE NO.	
Applicant Name	BOROUGH OF SPRING LAKE
Proposed Project	WRECK POND OUTFALL
Location	OCEAN AVENUE/SPRING LAKE
Sheet of	_____
Date	_____

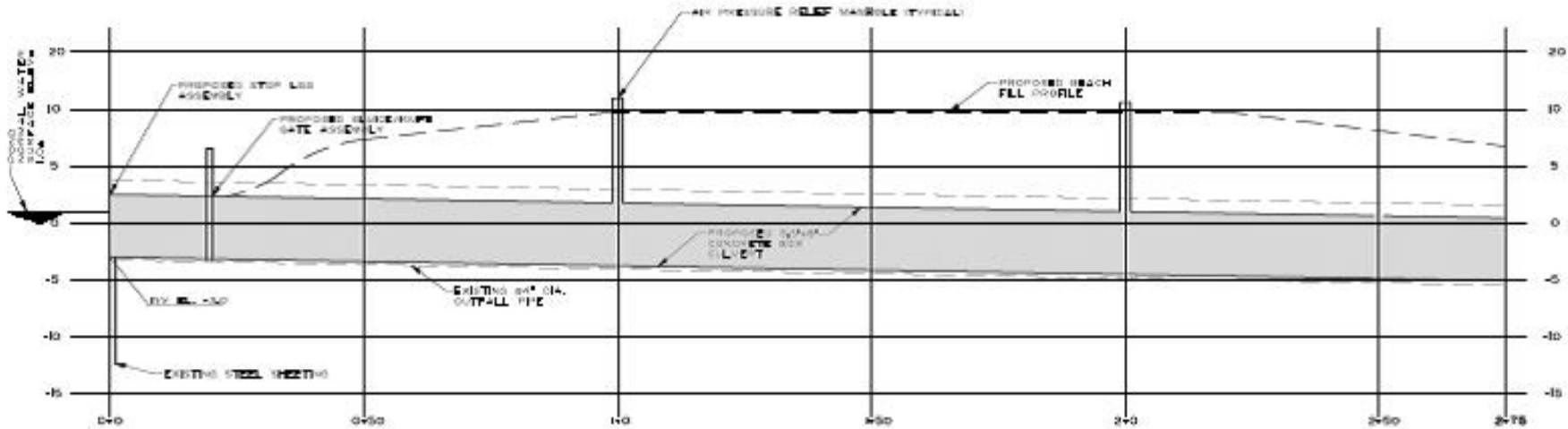
ISA
 LEON S. ANGELO, INC.
 Consulting Engineers
 100 W. 11th St.
 NEW YORK, NY 10011
 (212) 213-1000 Fax: (212) 213-1001

PETER R. AVAKIAN, P.E.
 PROFESSIONAL ENGINEER No. 124, 105, 20882

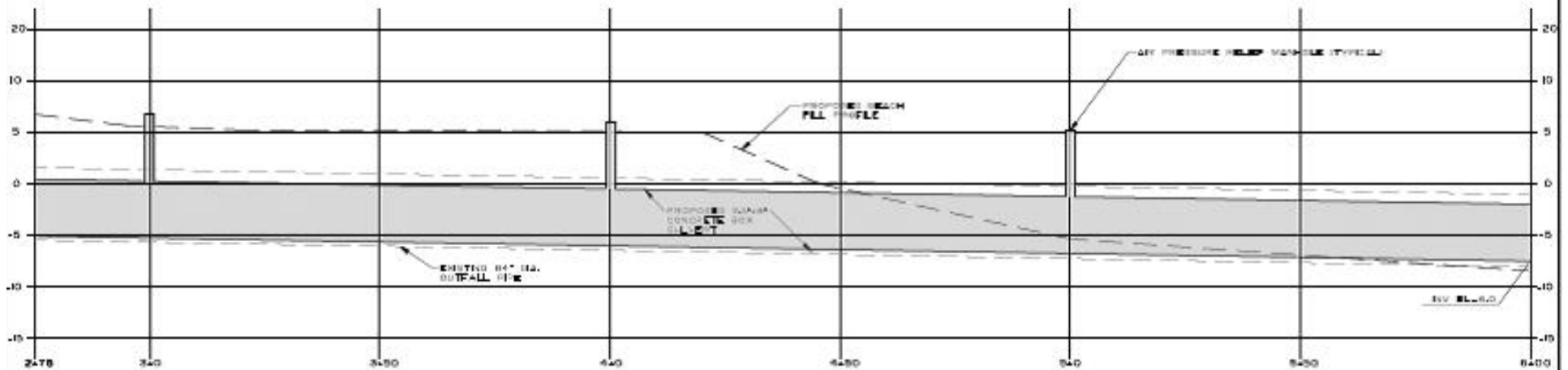
OUTFALL CONSTRUCTION PLAN

PROPOSED BYPASS BOX CULVERT
 AT
WRECK POND OUTFALL
 IN THE
BOROUGH OF SPRING LAKE
MONMOUTH COUNTY, NEW JERSEY

SCALE	DATE	DRAWN BY	CHECKED BY	JOB NO.	180BT
1" = 30'	JUN. 25, 2008	M.P.S.	S.J.M.	21-046	2 of 7



PROFILE STA. 0+0 TO 2+75
SCALE: 1" = 10' H, 1" = 100' H



PROFILE STA. 2+75 TO 5+50
SCALE: 1" = 10' H, 1" = 100' H



1" = 10'



1" = 10'

Outfall Profile

REVISIONS
 Applicant Name: BOROUGH OF SPRING LAKE
 Proposed Project: WRECK POND OUTFALL
 Location: SPRING LAKE
 Date of: _____

LSA
 LEON S. AVAKIAN, INC.
 Consulting Engineers
 100 WESTFIELD
 NEW BRUNSWICK, NJ 08901
 TEL: 732-839-1100 FAX: 732-839-1101

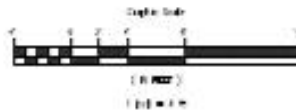
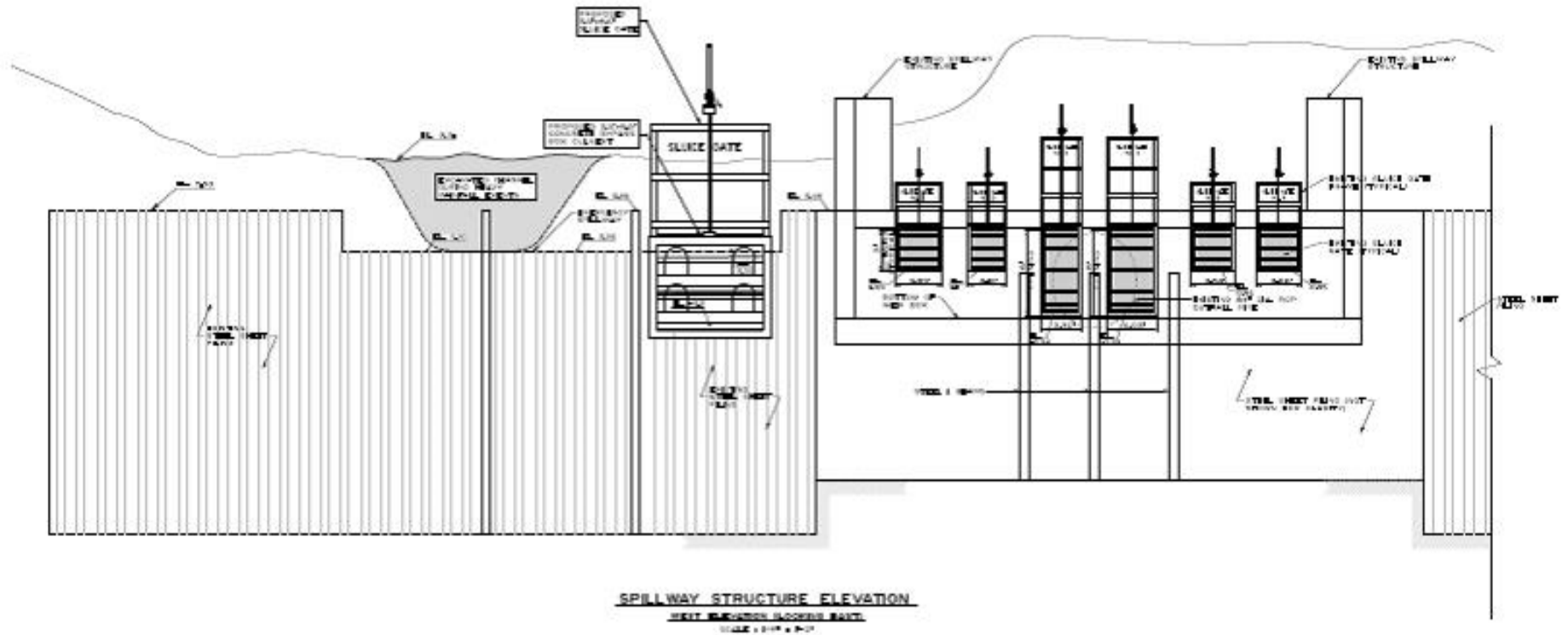
PETER R. AVAKIAN, P.E.
 PROFESSIONAL ENGINEER No. 26442

OUTFALL PROFILE PLAN
PROPOSED BYPASS BOX CULVERT
AT
WRECK POND OUTFALL
IN THE
BOROUGH OF SPRING LAKE
MONMOUTH COUNTY, NEW JERSEY


SCALE: 1" = 10' H, 1" = 100' H	DATE: JUN. 20, 2009	DRAWN BY: MFC	CHECKED: PJA	JOB NO.: 08-042	SHEET: 4 of 7
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NO.	DESCRIPTION	BY	CHK.	DATE

Outfall Cross Section

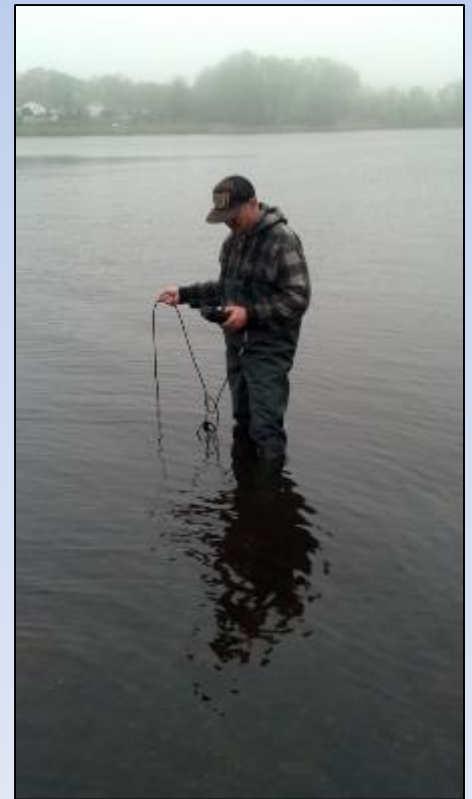


FILE #	
Applicant Name	BOROUGH OF SPRING LAKE
Proposed Project	BRIDGE OVER FALL
Location	OCEAN AVENUE
Sheet #	2 of 7

 Lavin S. Avakian, Inc. Consulting Engineers 1000 ROUTE 1 FREEHOLD, NJ 07728 TEL: 732-841-1111 FAX: 732-841-1111	OUTFALL CROSS SECTION PLAN				
	PROPOSED BYPASS BOX CULVERT AT WRECK POND OUTFALL IN THE BOROUGH OF SPRING LAKE MONMOUTH COUNTY, NEW JERSEY				
PETER R. AVAKIAN, P.E. PROFESSIONAL ENGINEER #11,412, 20042	SCALE	DATE	DRAWN BY	CHECKED BY	JOB NO.
	AS SHOWN	JAN 26, 2007	M.P.S.	E.J.M.	21-046
					SHEET
					2 OF 7

Project Goals

- 1) Increase Fish Passage Opportunities
- 2) Reduce Flooding
- 3) Improve Water Quality



Project Goals: Enhance Fish Passage

1) Increase Fish Passage Opportunities

- Improvements for fish passage included on culvert
 - lighting, flow regulation, water elevation level control, eel netting



Project Goals: Reduce Flooding



Legend

Modeled Peak Flood Elevation

- 7 ft Flood Elevation- Current outfall
- 5 ft Flood Elevation- Proposed double outfall

NOTE: Storm Event is for 10-year New Jersey 24-hour rainfall data for Monmouth County with typical tides from Summer 2014

Model Result for 10 Year Rainfall Storm Event

0 300 600 900
Feet

Source:
Contours generated from 2015 NED data from USGS National Map
2012 Aerial NJwstmap



Project Goals: Reduce Flooding



Legend

Modeled Peak Flood Elevation

- 10 ft Flood Elevation- Current outfall
- 8 ft Flood Elevation- Proposed double outfall

NOTE: Storm Event is for 50-year New Jersey 24-hour rainfall data for Monmouth County with typical tides from Summer 2014

Model Result for 50 Year Rainfall Storm Event

0 300 600 900 Feet

Source:
Contours generated from 2015 NED data from USGS National Map
2012 Aerial NJwebmap



Project Goals: Reduce Flooding



Legend

Modeled Peak Flood Elevation

- 11 ft Flood Elevation- Current outfall
- 10 ft Flood Elevation- Proposed double outfall

NOTE: Storm Event is for 100-year New Jersey 24-hour rainfall data for Monmouth County with typical tides from Summer 2014

Model Result for 100 Year Rainfall Storm Event

0 300 600 900
Feet

Source:
Contours generated from 2015 NED data from USGS National Map
2012 Aerial NJwebmap



Project Goals: Reduce Flooding



Legend

Modeled Peak Flood Elevation

- 14 ft Flood Elevation- Current outfall
- 13 ft Flood Elevation- Proposed double outfall

NOTE: Storm Event is for 500-year New Jersey 24-hour rainfall data for Monmouth County with typical tides from Summer 2014

Model Result for 500 Year Rainfall Storm Event

0 300 600 900
Feet

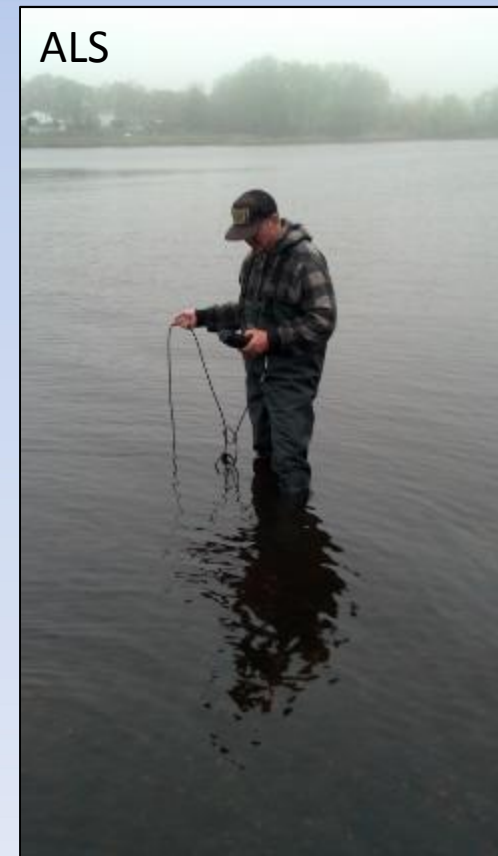
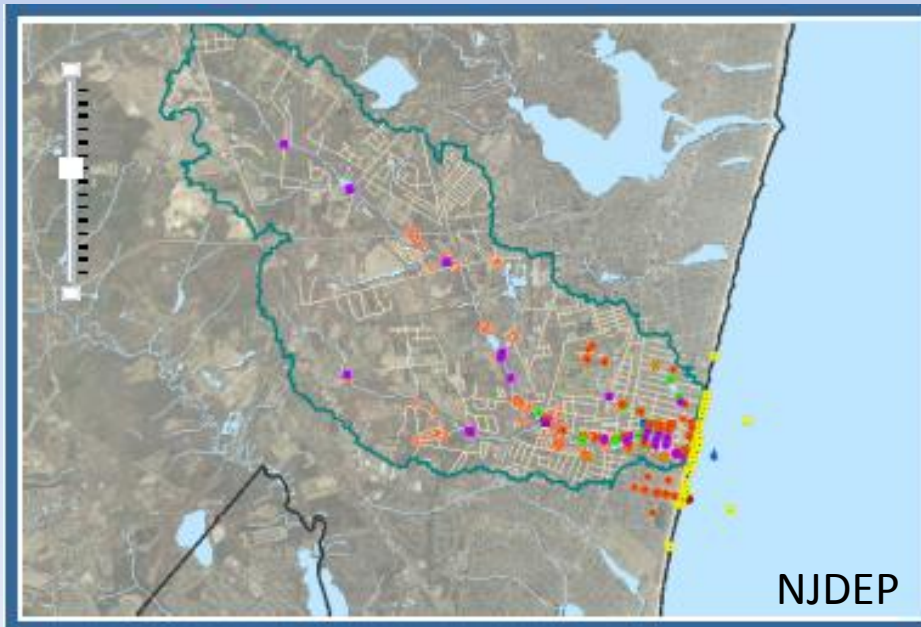
Source:
Contours generated from 2015 NED data from USGS National Map
2012 Aerial NJveomap



Project Goals: Improve Water Quality

3) Improve Water Quality

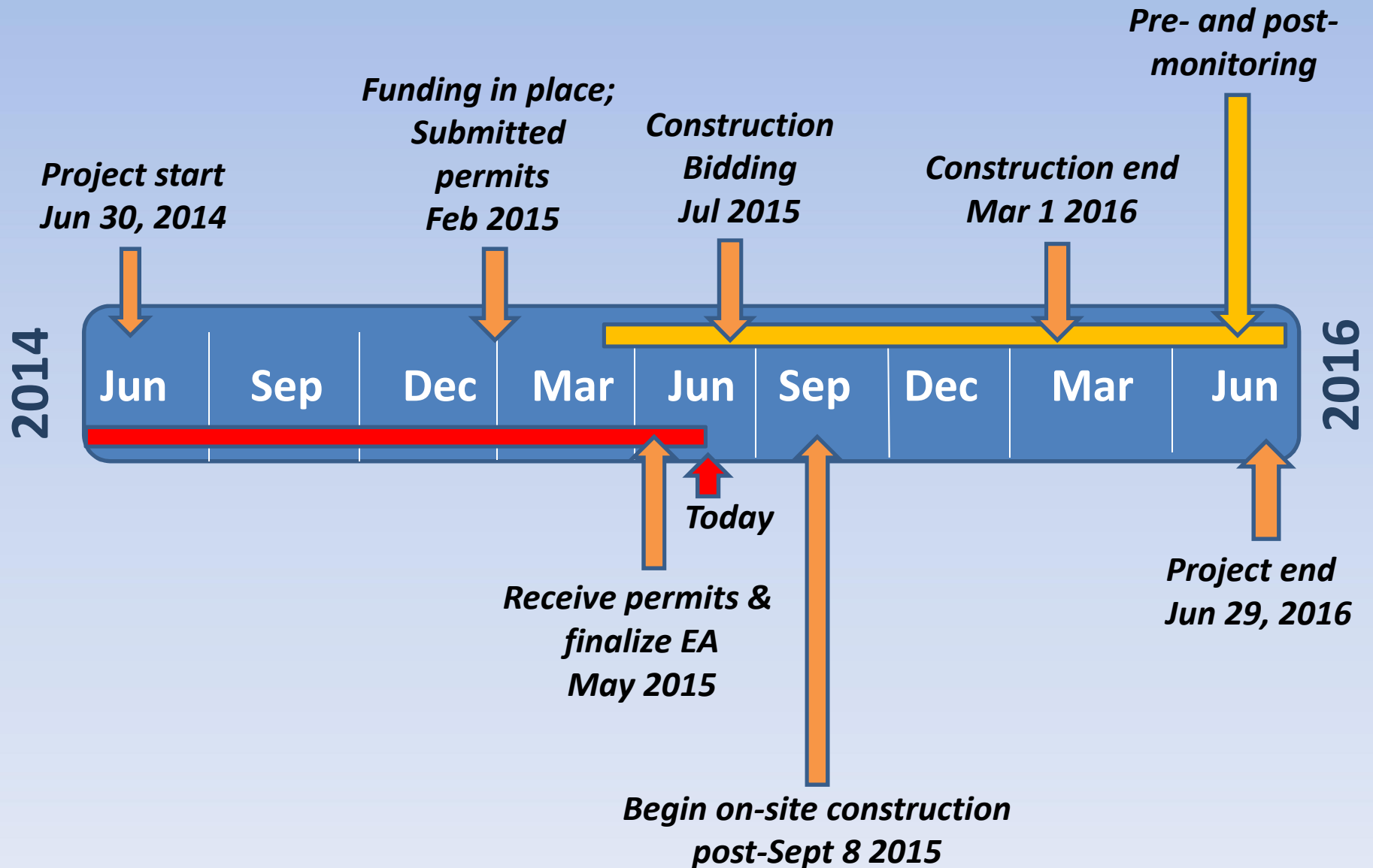
- Increased natural tidal flows & flushing
- Improve salinity gradient to benefit wetlands flora and fauna



What's been done so far?

- Oct 2014 Received letter of concurrence for Section 106 review from State Historic Preservation Office and local tribal offices
- Oct 2014 *Attended Joint Project Permitting Meeting*
- Feb 2015 Received concurrence on revised Intra-service Section 7 Biological Evaluation; Completed permit ready plans
- Apr 2015 *Environmental Assessment complete and FONSI issued*
- May 2015 Received Federal Consistency Determination from NJDEP & US Army Corps of Engineers Nationwide permit
- Jun 2015 *Received EFH consultation from NOAA; Applied for Tidelands License*

Project Timeline



Pre and Post-Construction Monitoring



1) Fish

2) Habitat

3) Water Quality & Salinity

4) Water Level

5) Tidal Flow

6) Flooding

Monitoring: Fish

Spring 2015 Adult River Herring

- Fyke net set @ RR Track Bridge
- 6 am and 6 pm net checks
- 4 events

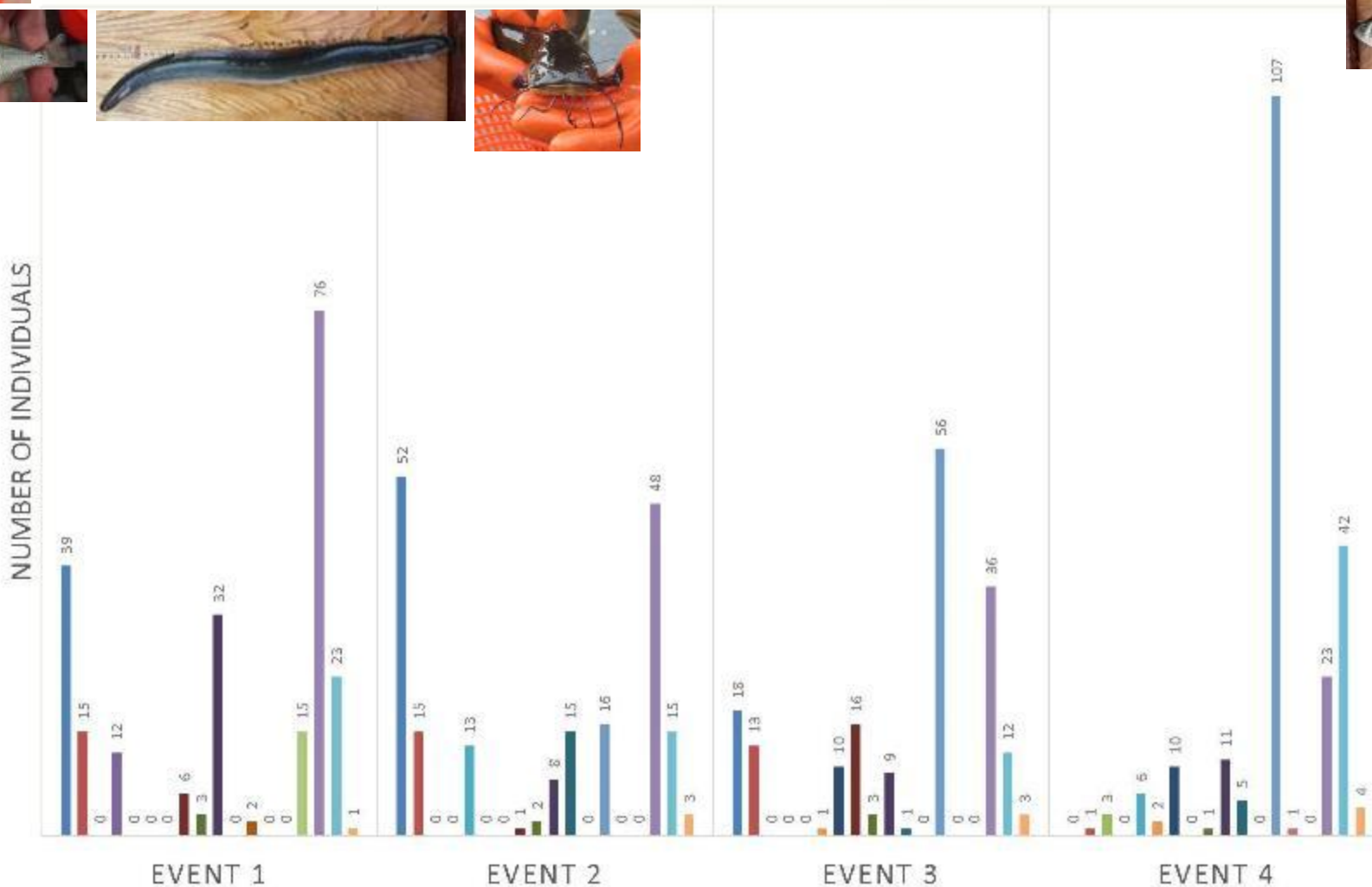
- May 1-5 (Full Moon)
- May 15-19 (New Moon)
- May 31-June 4 (Full Moon)
- June 14-18 (New Moon)



Monitoring: Fish - Spring 2015



- Alewife
- American eel
- Atlantic croaker
- Atlantic silverside
- Banded killifish
- Black crappie
- Bluegill
- Brown bullhead
- Common carp
- Gizzard shad
- Golden shiner
- Mummichog
- Pumpkinseed
- Striped bass
- Striped killifish
- White perch
- White sucker
- Yellow perch



Monitoring: Fish

- Coming up - Fall Juvenile River Herring Surveys
 - September/October
 - Seine nets



Monitoring: Habitat

- 2005-2006: Freehold Soil Conservation District
 - Natural Resources Conservation Service – Stream Visual Assessment Protocol
- Spring 2015 Surveys
 - June 3, 4, 16, 18, 30 & July 1
 - Hannabrand, Wreck Pond Brook, Black Creek
 - Goals:
 - 1) Document fish passage barriers
 - 2) Assess stream habitat upstream of barriers

Monitoring: Habitat - Hannabrand Brook



Monitoring: Habitat – Black Creek

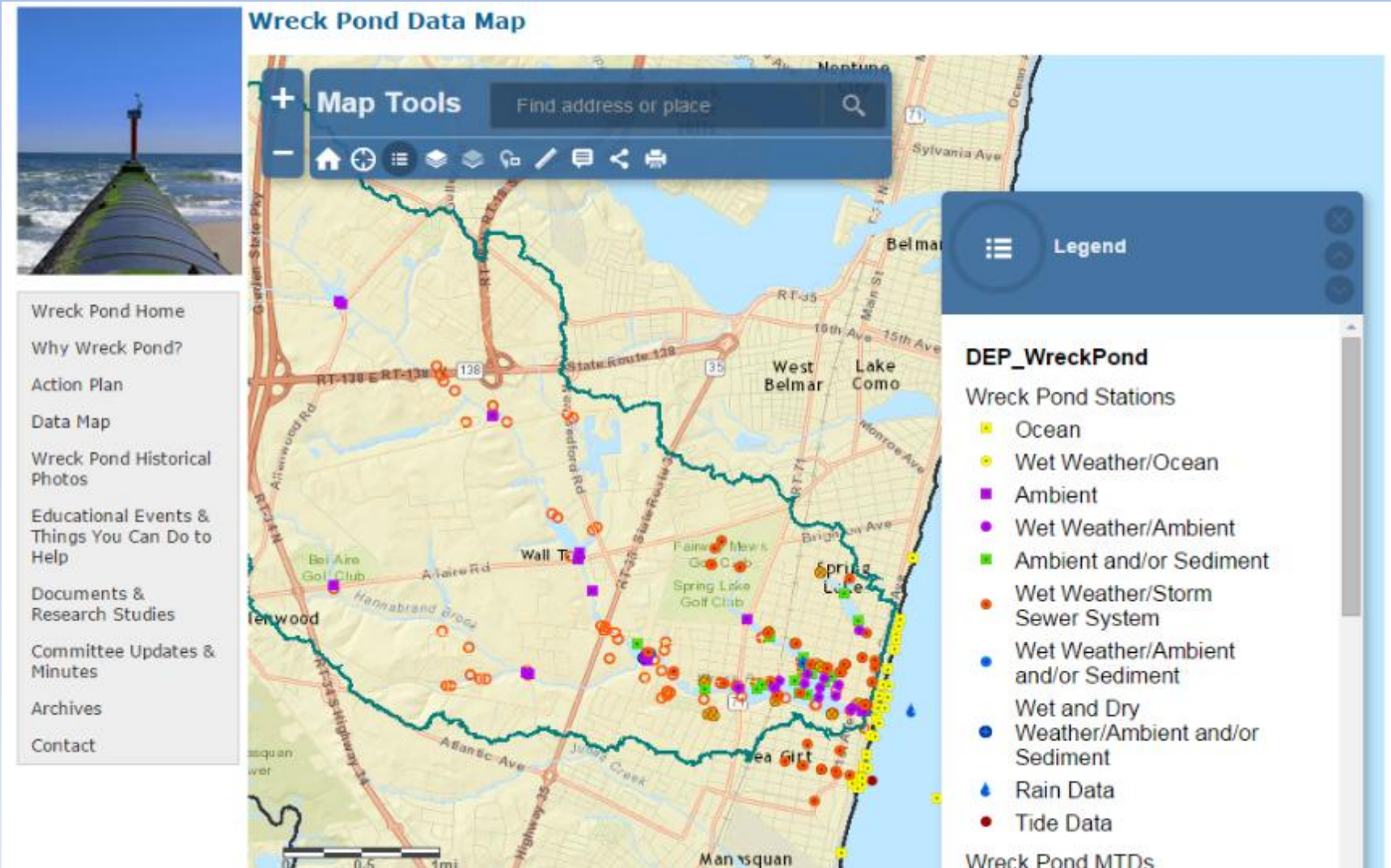


Monitoring: Habitat – Wreck Pond Brook



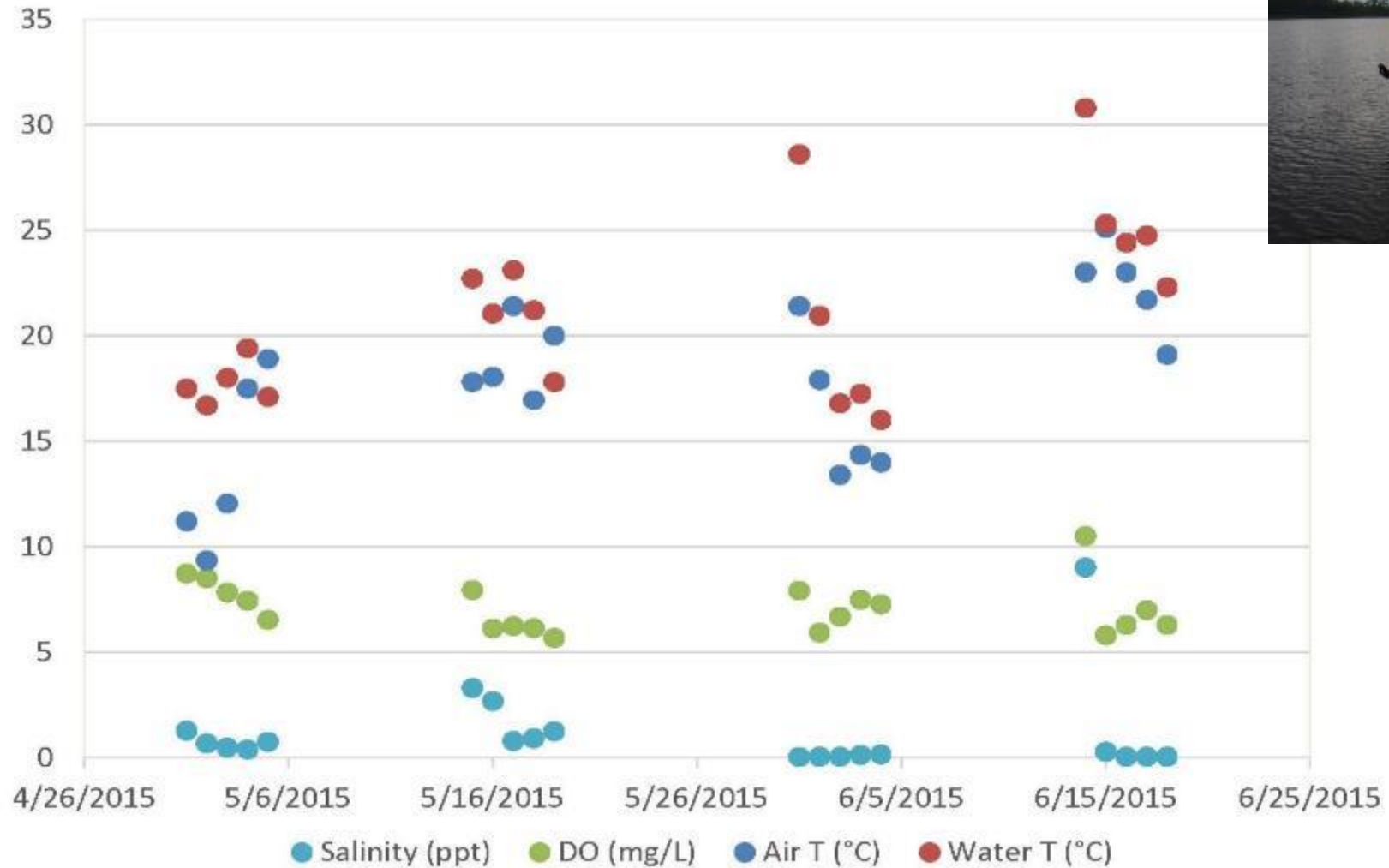
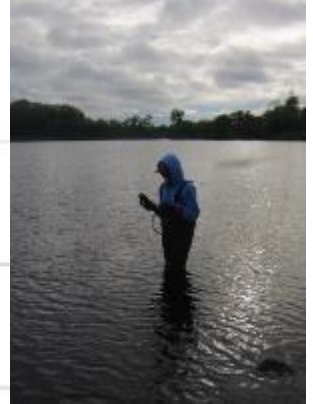
Monitoring: Water Quality & Salinity

NJDEP website: <http://www.nj.gov/dep/wreckpond/>



Monitoring: Water Quality & Salinity

Location: Spring Fish Survey RR Tracks; Equipment: YSI Pro Plus




Monitoring: Water Level & Tidal Flow

- Pre-construction monitoring completed by USACE (Wreck Pond Feasibility Study; 2014)
- More information can be found at <http://www.nj.gov/dep/wreckpond/documents.htm>

Data Collection

Instruments and Parameters

- **Wreck Pond**
 - YSI 600 Water Quality Sonde
 - Temperature, Conductivity, Dissolved Oxygen
 - Nortek Aquadopp ADCP
 - Level, temperature, current (speed and direction)
- **Outfall (Ocean Side)**
 - Solinst Levellogger Junior
 - Level
 - Onset Conductivity Logger
 - Conductivity
- **Outfall (Pond Side)**
 - SonTek IQ Pipe flow meter
 - Level, velocity, flow
 - Solinst Barologger
 - Barometric Pressure



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- Post-construction monitoring details to be determined

Outreach & Education

- Outreach Coordinator – Julie Schumacher
- Signage
- Video
- School programs and field trips
- Community tours & citizen science monitoring
 - Birds – beach, main pond, Jimmy Burns park
 - Spill Spotters assessment
 - Wreck Pond Pal

Next steps:

- | | |
|-----------------------|---|
| Jul 2015 | Apply for Dam Safety permit; Open bidding for construction contractor |
| Aug 2015 | Receive bids & award bid at Borough of Spring Lake Council Meeting; Attend Tidelands meeting |
| Sept 2015 | Mobilization/start of on-site construction (4-6 months) |
| Mar 2016 | Construction complete for permit compliance |
| May 2015
-Jun 2016 | Outreach; Complete Operations and Maintenance Manual for culvert; Pre-and post- construction monitoring of Habitat, fish, flow, water quality, tidal flow/flushing, birds |

QUESTIONS?

