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Subject **Daily Monitoring Report**

Client Eversource Energy **Date** October 28, 2019

Project Independent Environmental Monitoring, Little Bay Submarine Cable Installation, Seacoast Reliability Project

Project No. E2X85301 **File** Daily Monitoring Report_SRP Little Bay IEM_Cable 2 Install 10-28-19

Prepared by Jeffrey Nield **Phone No.** 617-963-3109

Copies to Gregg Comstock, NH DES
 David Price, NH DES
 Chris Nash, NH DES
 Kurt Nelson, Eversource Energy

WEATHER OBSERVATIONS				
TIME	WIND (DIRECTION AND SPEED [KTS])	VISIBILITY (NM)	PRECIPITATION (PREV. 24H)	COMMENTS
11:30	5-7 N gusts to 10	>5 NM	1"	52 °F overcast, periodic light showers.
14:00	5 NE gusts to 10	>5 NM	1"	52 °F overcast, periodic light showers. High tide at 8.3 feet at approximately 1330h.
17:00	6 NE gusts to 5	>5 NM	1"	50 °F overcast, periodic light showers

Summary of Work Activities (Adopted from Durocher Daily Report)

Activity	EDT	Work Description
Cable Installation	1130	IEM on main barge in contact with water quality team. Monitoring began at 1100 for a 1300 jet plow start.
	1300	All equipment ready for plow start, divers preparing to enter the water to dump float bags
	1320	Begin plowing; sta. 399+95 start

	1321	Pumps to 1300 RPM. Taking up on tow wire
	1403	Pumps to and idle
Cable Installation	1404	Get rigging from 2002 barge to help steer plow
	1514	Diver attach rigging to port and starboard side of plow
	1515	Resume plowing, pumps to 1300 RPM, tow tension 15,000 lbs, connect workboat on starboard side of plow to steer south. plow sta. 406+29.
	1655	All stop to adjust tow boat to steer plow south, recover bags. plow sta. 413+94.
	1707	Resume plowing, 19,000 lbs
	1823	All stop on the plow, finish forward progress for the night. STA 418+58. X = 1198679.86 Y = 220389.06
	1902	Pump barge secure on starboard side of 2002 barge
	1930	At the dock

Summary of Observations

Item	Observations and Notes
1	Jet plow operations – Cable 2 (center alignment) installation by jet plow starting on western tidal flat. Begin plowing at 1320. Operations team reporting difficulty keeping jet plow in alignment and tracking course with enough separation from other cable (Cable 1). Durocher moved tug into position south of jet sled and attached line to southern runner to apply tension and pull it south and on course.
2	Water quality monitoring – Weather monitored since 72 hours before scheduled jet plow. No weather or wind concerns for IEM and WQ Team for scheduled Cable 2 installation. Drone was deployed. When tug was moved into position to assist with tracking of the jet plow, Normandeau reported high turbidity plume as observed from the boats and drone. The tug attached to the jet sled and work boat attached to the pump barge were operating a high power and causing large amounts of prop wash and a noticeable plow. Water quality team reported a 65 NTU reading at Station 10 (nearfield, north-western tidal flat station). IEM spoke with Normandeau at 1635 about the event. IEM communicated with Durocher about observations and discussed corrective measures.

Turbidity Data Reports and IEM Actions/Responses

Turbidity (NTU) Reported	Time of Report	IEM Action/Response	Time of Response	Result
Avg: 18 NTU at Station 21 (westernmost tidal flat station). 3 NTU above BSAL.	17:40	Relay message to Durocher, Eversource Rep and LS Cable Rep. Discuss likely source and activity (tug pulling on jet sled).	17:50	Normandeau to re-test Station in 30 minutes. IEM to monitor for results. IEM ordered no corrective operational action because the likely source of plume (high turbidity) had been removed at low tide when tug moved off the tidal flat and only one work boat was used to move the pump barge.
Station 21 average results 30 minutes after exceedance reported by Normandeau: Average of 13 NTU (below BSAL)	18:10	Relay message to Durocher, Eversource Rep and LS Cable Rep.		IEM requested to continue to monitor/report if other exceedances were reported. No corrective action because operations were nearing the end as we reached the western edge of the channel.

Boundary Station Action Levels (BSAL) reported by Normandeau at 1300.

Tidal: BSAL = 15 NTU

Channel: BSAL = 15 NTU

Turbidity Monitoring Spreadsheet for SRP 2019 TIDAL STATIONS REFERENCE					Turbidity Monitoring Spreadsheet for SRP 2019 CHANNEL STATIONS REFERENCE					
Station	Max Turbidity			Average Reference Turbidity (NTU)	Station	Max Turbidity			Average Reference Turbidity (NTU)	
	(NTU)	Time	Depth			(NTU)	Time	Depth		
10	7.10	11:50	B	6.35	Nearfield	12	3.70	12:05	B	3.27
11	2.80	11:40	B	2.70		13	3.10	12:20	B	2.80
14	3.40	12:40	B	3.10		17	3.60	12:08	B	3.23
15	21.90	11:30	B	16.93		18	2.60	12:33	B	2.40
16	2.60	11:50	M	2.40		22	3.40	11:50	M	3.30
19	3.30	12:32	B	2.97		24	4.20	12:20	S	3.73
21	3.30	11:35	B	3.00		25	2.90	12:30	B	2.67
23	4.80	12:10	B	4.17		27	3.50	12:03	B	2.83
26	2.80	12:35	S	2.57		28	2.80	11:52	M	2.67
30	2.70	12:11	S	2.60		29	3.10	12:18	B	2.97
42	2.30	13:03	B	2.10	Ref	41	2.40	12:45	M	2.23
						43	3.20	11:39	M	3.03

Reference Turbidity Data reported to IEM on October 28, 2019 at 1300

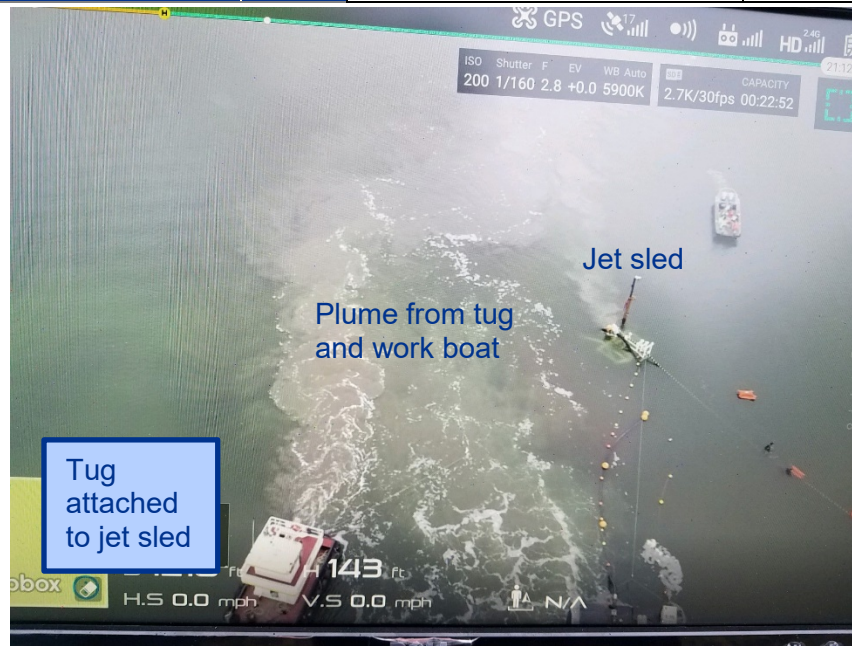
Turbidity (NTU) Reported	Time of Report	IEM Action/Response	Time of Response	Result								
Turbidity Monitoring Spreadsheet for SRP 2019 TIDAL STATIONS JET PLOW DATA FROM 10/28/19		Turbidity Monitoring Spreadsheet for SRP 2019 CHANNEL STATIONS JET PLOW DATA FROM 10/28/19										
	Station	Max Turbidity			Average Reference Turbidity (NTU)		Station	Max Turbidity			Average Reference Turbidity (NTU)	
		(NTU)	Time	Depth				(NTU)	Time	Depth		
	Nearfield	10	6.50	13:40	S	4.30	Boundary	22	6.50	14:50	S	3.45
		11	2.70	13:55	B	2.30						
		15	0.00	0:00	0:00	0.00						
		16	2.70	13:58	B	2.50						
	Boundary	21	0.00	0:00	0:00	0.00						
		23	3.40	14:00	B	3.03						
	10/28/19 BSAL = 15 NTU						10/28/19 BSAL = 15 NTU					

Hour 1 Water Quality Report from Normandeau

Turbidity (NTU) Reported	Time of Report	IEM Action/Response	Time of Response	Result								
Turbidity Monitoring Spreadsheet for SRP 2019 TIDAL STATIONS JET PLOW DATA FROM 10/28/19		Turbidity Monitoring Spreadsheet for SRP 2019 CHANNEL STATIONS JET PLOW DATA FROM 10/28/19										
	Station	Max Turbidity			Average Reference Turbidity (NTU)		Station	Max Turbidity			Average Reference Turbidity (NTU)	
		(NTU)	Time	Depth				(NTU)	Time	Depth		
	Nearfield	10	13.00	14:40	B	5.37	Boundary	22	6.50	14:50	S	3.4
		11	4.40	14:55	B	2.80						
		15	5.70	13:40	M	4.33						
		16	2.90	15:11	M	2.45						
	Boundary	21	7.90	14:45	S	4.55						
		23	3.40	14:00	B	2.73						
	10/28/19 BSAL = 15 NTU						10/28/19 BSAL = 15 NTU					

Hour 2 Water Quality Report from Normandeau

Turbidity (NTU) Reported	Time of Report	IEM Action/Response	Time of Response	Result
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Drone image provided by Normandeau indicating plume from tug, work boat, and jet plow. October 28, 2019 – approx 1600h.

Turbidity Monitoring Spreadsheet for SRP 2019 TIDAL STATIONS JET PLOW DATA FROM 10/28/19						Turbidity Monitoring Spreadsheet for SRP 2019 CHANNEL STATIONS JET PLOW DATA FROM 10/28/19					
Station	Max Turbidity			Average Reference Turbidity (NTU)	Station	Max Turbidity			Average Reference Turbidity (NTU)		
	(NTU)	Time	Depth			(NTU)	Time	Depth			
Nearfield	10	62.00	15:45	B	18.65	Boundary	22	6.50	14:50	S	3.29
	11	4.50	15:55	S	3.20						
	15	5.70	13:40	M	3.90						
Boundary	16	2.90	15:11	M	2.51						
	21	7.90	14:45	S	4.57						
	23	3.40	14:00	B	2.66						
10/28/19 BSAL = 15 NTU						10/28/19 BSAL = 15 NTU					

Hour 3 Water Quality Report from Normandeau.

Turbidity (NTU) Reported	Time of Report	IEM Action/Response	Time of Response	Result
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Turbidity Monitoring Spreadsheet for SRP 2019 TIDAL STATIONS JET PLOW DATA FROM 10/28/19						Turbidity Monitoring Spreadsheet for SRP 2019 CHANNEL STATIONS JET PLOW DATA FROM 10/28/19					
Station	Max Turbidity			Average Reference Turbidity (NTU)	Station	Max Turbidity			Average Reference Turbidity (NTU)		
	(NTU)	Time	Depth			(NTU)	Time	Depth			
Nearfield	10	62.00	15:45	B	16.19	Nearfield	12	2.80	17:05	S	2.80
	11	196.00	16:50	B	36.86		17	2.50	17:08	M	2.37
	15	5.70	13:40	M	3.55	Boundary	22	6.50	14:50	S	3.22
	16	2.90	15:11	M	2.46		24	3.20	16:44	B	2.27
Boundary	21	7.90	14:45	S	4.83	10/28/19 BSAL = 15 NTU					
	23	6.70	16:55	M	3.34	10/28/19 BSAL = 15 NTU					

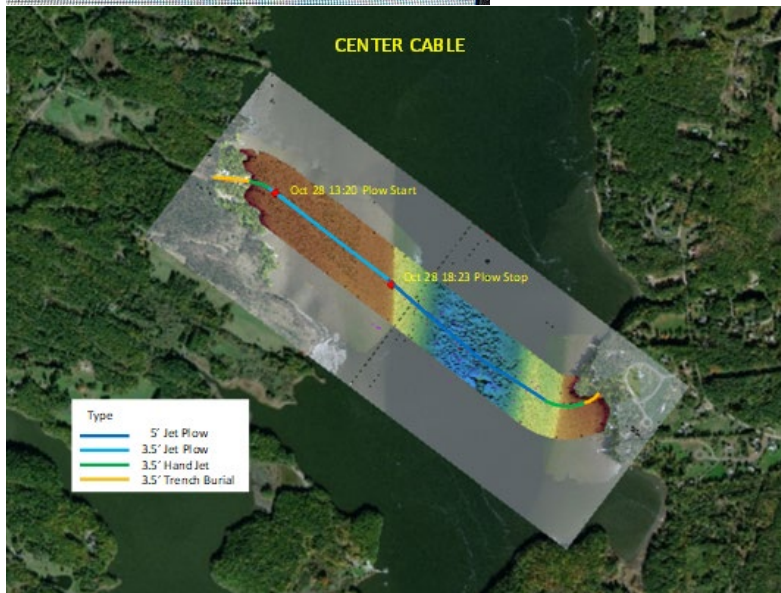
Hour 4 Water Quality Report from Normandeau.

Turbidity Monitoring Spreadsheet for SRP 2019 TIDAL STATIONS JET PLOW DATA FROM 10/28/19						Turbidity Monitoring Spreadsheet for SRP 2019 CHANNEL STATIONS JET PLOW DATA FROM 10/28/19					
Station	Max Turbidity			Average Reference Turbidity (NTU)	Station	Max Turbidity			Average Reference Turbidity (NTU)		
	(NTU)	Time	Depth			(NTU)	Time	Depth			
Nearfield	10	62.00	15:45	B	15.02	Nearfield	12	2.80	17:05	S	2.67
	11	196.00	16:50	B	42.24		17	2.50	17:08	M	2.35
	15	5.70	13:40	M	3.41	Boundary	22	6.50	14:50	S	3.47
	16	2.90	15:11	M	2.35		24	3.30	18:20	B	2.55
Boundary	21	23.40	17:40	B	8.31	10/28/19 BSAL = 15 NTU					
	23	6.70	16:55	M	3.36	10/28/19 BSAL = 15 NTU					

Hour 5 Water Quality Report from Normandeau

Turbidity (NTU) Reported	Time of Report	IEM Action/Response	Time of Response	Result
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Font... Configure... Style	
Plow Lat Local	43d06.3048' N
Plow Lon Local	070d52.1544' W
Plow DBL	39994.67
Plow Speed(kt)	0.00
Plow East	1197208.75
Plow North	221535.04
Time	17:04:54



Font... Configure... Style	
Plow Lat Local	43d06.1148' N
Plow Lon Local	070d51.8259' W
Plow DBL	41857.63
Plow Speed(kt)	0.00
Plow East	1198682.07
Plow North	220395.18
Time	22:34:42

Cable 2 Installation – October 28, 2019 – Start and end locations (Plow DBL) for western tidal flat crossing (Day 1). Map courtesy of Eversource (R. Muñoz)

Summary of Work Stops, Modification and Other Operational changes requested by the IEM during Operations

Item	
1	Additional monitoring of Station 21 was required because of exceedance reported likely due to large plume caused by tug working on jet sled. Tug activity stopped as low tide approached, removing turbidity source. Also, end of plowing for the day was in the near term. IEM raised issue about use of tug and workboats on the tidal flat as a operational concern to be discussed for future installation activities.

Item	
2	Operational delays due primarily to issues with the jet sled tracking to the north due to unknown causes.

Action Items

Item	
1	Completed installation of Cable #2 across western tidal flat. Returning October 29, 2019 for installation of Cable #2 across the channel. Normandeau to begin monitoring at 0900 for a 1000 jet plow start target.
2	Normandeau, IEM and operations team to discuss Cable #3 installation and how to minimize prop wash on the tidal flat from tug and work boats.

I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my own inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate, and complete to the best of my knowledge and belief.

Signed: _____  _____

Jeffrey Nield
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Dated: October 29, 2019