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**Subject**                      **Weekly Monitoring Report – SRP Submarine Cable Diver Burial Activities**

**Client**                      Eversource Energy                      **Date**                      November 24, 2019

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

**Project No.**                      E2X85301                      **File**                      Daily Monitoring Report\_SRP Little Bay IEM\_Diver Burial Week 2 11-17 to 11-23

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### Weather Observations

Sunday, November 17, 2019			Est. Tides: 9:25 a.m. Low; 3:35 a.m. High	
TIME	WIND (DIRECTION AND SPEED [KTS])	VISIBILITY (NM)	PRECIPITATION (PREV. 24H)	COMMENTS
07:00	8 NE gusts 15	>5 NM	-	21 °F; cloudy
13:00	10 NE gusts 15	>5 NM	-	36 °F; cloudy
16:00	9 NE	>5 NM	-	30 °F; cloudy
Monday, November 18, 2019			Est. Tides: 10:19 a.m. Low; 4:30 p.m. High	
TIME	WIND (DIRECTION AND SPEED [KTS])	VISIBILITY (NM)	PRECIPITATION (PREV. 24H)	COMMENTS
07:00	14 N gusts to 24	>5 NM	-	32 °F; cloudy
13:00	15 NE gusts to 29	>5 NM	-	36 °F; rain
16:00	15 NE gusts to 29	>5 NM	-	36 °F; rain

Tuesday, November 19, 2019				Est. Tides: 5:20 a.m. Low; 11:18 a.m. High
TIME	WIND (DIRECTION AND SPEED [KTS])	VISIBILITY (NM)	PRECIPITATION (PREV. 24H)	COMMENTS
07:00	3 NW gusts to 5	>5 NM	0.25"	36 °F; rain
13:00	3 NW gusts to 5	>5 NM	-	37 °F; rain
16:00	3 N gusts to 20	>5 NM	-	37 °F; Cloudy
Wednesday, November 20, 2019				Est. Tides: 6:21 a.m. Low; 12:22 p.m. High
TIME	WIND (DIRECTION AND SPEED [KTS])	VISIBILITY (NM)	PRECIPITATION (PREV. 24H)	COMMENTS
07:00	7 N gusts to 15	>5 NM	-	37 °F; rain
13:00	7 N gusts to 15	>5 NM	-	37 °F; rain
16:00	10 N gusts to 20	>5 NM	-	37 °F; rain
Thursday, November 21, 2019				Est. Tides: 7:23 a.m. Low; 1:29 p.m. High
TIME	WIND (DIRECTION AND SPEED [KTS])	VISIBILITY (NM)	PRECIPITATION (PREV. 24H)	COMMENTS
07:00	6 NW	>5 NM	-	30 °F; clear
13:00	6 W gusts 10	>5 NM	-	46 °F; clear
16:00	5 W gusts 8	>5 NM	-	41 °F; clear
Friday, November 22, 2019				Est. Tides: 8:25 a.m. Low; 2:36 p.m. High
TIME	WIND (DIRECTION AND SPEED [KTS])	VISIBILITY (NM)	PRECIPITATION (PREV. 24H)	COMMENTS
07:00	5 SW	>5 NM	-	45 °F; clear
13:00	10 SW	>5 NM	-	48 °F; clear
16:00	10 SW	>5 NM	-	43 °F; clear

Saturday, November 23, 2019			Est. Tides: 3:25 p.m. Low; 9:17 a.m. High	
TIME	WIND (DIRECTION AND SPEED [KTS])	VISIBILITY (NM)	PRECIPITATION (PREV. 24H)	COMMENTS
07:00	13 W gusts to 25	>5 NM	-	28 °F; clear
13:00	9 W gusts to 15	>5 NM	-	43 °F; clear
16:00	6 W gusts to 15	>5 NM	-	39 °F; clear

### Summary of Work Activities

Day/Date	Work Description
Sunday, November 17, 2019	<p>Only west side diver burial – 1233 start, 1618 finish. No east side diver burial.</p> <p>Water quality monitoring using one vessel for the duration of diver burial including pre- and post- hand-jetting monitoring. Mackworth Env on site to check turbidity barrier.</p>
Monday, November 18, 2019	<p>East side diver burial 0858 start, 1500 finish; west side 0755 start, pause from 1105 – 1345, approx. 1615 finish.</p> <p>Water quality monitoring using two vessels for the duration of diver burial including pre- and post- hand-jetting monitoring.</p>
Tuesday, November 19, 2019	<p>East side diver burial 0927 start, 1530 finish; west side 0755 start, 1615 finish.</p> <p>Water quality monitoring using two vessels for the duration of diver burial including pre- and post- hand-jetting monitoring.</p>

Day/Date	Work Description
Wednesday, November 20, 2019	<p>East side diver burial 1040 start, pause approx. at 1200, resume at 1500 1615 finish; west side 0802 start, pause at 1140 – 1454, 1610 finish.</p> <p>Rescue capsized Mackworth Env work boat, deploy oil boom.</p> <p>Water quality monitoring using two vessels for the duration of diver burial including pre- and post- hand-jetting monitoring.</p>
Thursday, November 21, 2019	<p>East side diver burial 0755 start, pause approx. at 0900, resume at 1105, 1500 finish; west side 0752 start, 1400 finish.</p> <p>Water quality monitoring using two vessels for the duration of diver burial including pre- and post- hand-jetting monitoring.</p>
Friday, November 22, 2019	<p>No east side diver burial due to equipment failure.</p> <p>West side diver burial 0650 start, 1310 finish.</p> <p>Water quality monitoring using two vessels for the duration of diver burial including pre- and post- hand-jetting monitoring.</p>
Saturday, November 23, 2019	<p>East side diver burial, 0656 start, 1417 finish, including 1-2 break for currents and equipment issues.</p> <p>West side burial continues in select areas because the turbidity barrier shifted southward over the southern cable. Diver burial started at 1026, 1300 finish. Several stops due to issues with barrier</p>

Weekly Monitoring Report – SRP Submarine  
 Cable Diver Burial Activities  
 November 17 - 23, 2019

Contractor's DIVER BURIAL TRACKING (thru 11/23/19) – Durocher Marine									
			Durham (west)			Gundalow Landing (east)			
#	Day	Sta. Start	South Cable (Phase 2)	Center Cable (Phase 1)	North Cable (Phase 3)	South Cable (Phase 2)	Center Cable (Phase 1)	North Cable (Phase 3)	Daily Total
			39915	40010	40040	44240	44185	44175	
1	Mon	11/11/19				0	0	60	60
2	Tue	11/12/19				0	65	0	65
	Wed	11/13/19				WD	WD	WD	0
3	Thu	11/14/19	0	0	35	90	30	0	155
4	Fri	11/15/19	0	0	100	60	45	0	205
5	Sat	11/16/19	0	60	0	0	65	0	125
6	Sun	11/17/19	0	65	0	0	0	0	65
7	Mon	11/18/19	0	25	40	0	40	0	105
8	Tue	11/19/19	0	0	90	40	0	0	130
9	Wed	11/20/19	0	45	15	0	0	30	90
10	Thu	11/21/19	0	40	0	0	0	45	85
11	Fri	11/22/19	10	15	0	0	0	0	25
12	Sat	11/23/19	0	0	0	0	0	30	30
<b>TOTAL</b>			<b>10</b>	<b>250</b>	<b>280</b>	<b>190</b>	<b>245</b>	<b>165</b>	<b>1140</b>
Sta. Stop			<b>39905</b>	<b>39760</b>	<b>39760</b>	<b>44430</b>	<b>44430</b>	<b>44340</b>	
% Complete			<b>4%</b>	<b>102%</b>	<b>102%</b>	<b>36%</b>	<b>48%</b>	<b>36%</b>	<b>+/-</b>

Diver Burial Total (ft.)	2170	100%
Completed to Date (ft.)	1140	53%
Diver Burial Balance	1030	47%

Average Feet./Day	95.0
Days to Complete	10.8
Est. Completion Date	12/04/19

Est. completion date does not include weather or no work days

### Summary of Observations

Item	Observations and Notes
1	<p><b>Diver burial (hand jetting)</b> – Burial activity on eastern side in channel outside without turbidity barrier. See table above for contractor tracking of cable burial.</p> <p>West side diver burial – all activity with turbidity barrier. Hand jetting interrupted by capsizing of Mackworth Env workboat and the shifting of the turbidity curtain.</p>
2	<p><b>Water quality monitoring</b> – Weather monitored for 72 hours before scheduled diver burial water quality monitoring events. Close communication with contractor and water quality teams whenever wind forecasts called for winds greater than 15 mph leading up to work days. No weather cancellations but wind conditions were closely monitored by IEM, Normandeau and Durocher.</p> <p>Swift ebb tide currents preventing divers on east side channel burial and resulting in 1 – 3 hour breaks on the east side. Water quality team taking breaks when possible.</p> <p>No exceedances reported throughout duration of the week. Turbidity readings during hand-jetting indicate very low increases in turbidity above background on both east and west sides. Normandeau providing daily water quality summaries to NH DES for previous day’s events.</p> <p>IEM able to view activity for Gundalow landing with binoculars and by work boat. Durocher Marine provided several opportunities for “on the water” inspections. IEM able to monitor western side diver burial from the shore and Getchell Property.</p> <p>Drone imagery continues to be useful to observe hand jetting activity. Drone continues to be used to guide the water quality monitoring team to run transects to “find” the plume with instruments. Water quality team did not detect elevated levels that could define a plume based on drone images. Any plume developed from hand jetting on the eastern channel edge quickly dissipated due to tidal forces.</p>
3	<p><b>Turbidity Barrier</b> – The turbidity barrier on the western tidal flat appeared to be structurally sound and placed appropriately to contain the diver burial activities until Friday evening, November 22<sup>nd</sup>. Possible movement of turbidity barrier was reported by IEM to Normandeau and Eversource at Friday afternoon site walk at Durham landing.</p> <p>Normandeau conducted turbidity measurements (in situ) inside and outside of the turbidity curtain. Preliminary results reported to IEM indicate barrier is working. Visual observations from shore and drone indicate some transport of very fine, very light-colored sediments at the surface <i>through</i> the curtain on the western shore.</p> <p>On Saturday, November 23<sup>rd</sup>, it was evident that the turbidity barrier on the western side had shifted in the previous 12-16 hours due to tide and wind. (Friday night was very windy; gusting up to 30 kts.)</p>

Item	Observations and Notes
	Minimal diver burial on the western side was completed on Saturday, 11/23/19 due to problems with the barrier. Eversource, Mackworth and other contractors working on a solution to the turbidity barrier because there is potential for cable damage due to dragging anchors.
4	<p><b>Capsized Mackworth Env Vessel</b> – IEM was alerted that the Mackworth Env vessel capsized at 0815 on November 20, 2019 just off the Durham shore while preparing to pull the 2<sup>nd</sup> turbidity barrier from the western shore to the eastern shore for installation prior to east side tidal flat diver burial. The one operator was quickly able to get out of the water and up to his truck. No one injured. Gas tank recovered from vessel. Vessel flipped upright. Small sheen from boat evident near shore to the south and outside of turbidity barrier. Durocher quickly deployed absorbent booms from dive barge and other work barge.</p> <p>IEM on site by 0845. Spoke with DES' Chris Nash by phone. No ongoing release. No major sheen or smell associated with capsized boat. Eversource reported that environmental services was arriving to address the spill and clean up. Mackworth lifted the boat out of the water onto a barge for transport to Great Bay Marine.</p>
5	<b>Drone down</b> – Doucet Survey drone crashed within western turbidity curtain at approximately 0830. Recovered by Semper divers.

### Turbidity Data Reports and Photographs

Turbidity (NTU) Reported and Observations
<p><b>Boundary Station Action Levels (BSAL)</b></p>
<p>Tidal: BSAL = 12-13 NTU</p>
<p>Channel: BSAL = 12-13 NTU</p>
<p>Per NH DES, Normandeau is providing daily water quality summaries via email for hand-jetting activities.</p>

### Turbidity (NTU) Reported and Observations



View from Getchell Property, Durham, NH showing diver barge (left), bottom-founded turbidity barrier, northern cable (yellow buoys) and center cable (green buoys). Surface indication (bubbles) of diver working on northern cable.



### Turbidity (NTU) Reported and Observations



Offshore apex (yellow segment) of turbidity barrier deployed on western diver burial work location. Inside the barrier is evident by leaves and turbidity water (at surface).

### Turbidity (NTU) Reported and Observations



Mackworth Env vessel upright and on rocks at Durham landing. Absorbent booms deployed by Durocher. Turbidity barrier meant for the eastern diver burial operation is in the photograph to the left. (Vessel capsized when Mackworth was attempted to stage the barrier offshore prior to towing to the eastern shore.)

### Turbidity (NTU) Reported and Observations



Photograph taken from Getchell Property, Durham, NH the morning of Saturday, November 23, 2019 indicating the southward (to picture left) shift of the bottom-founded turbidity barrier on the western side of Little Bay. High winds the night before likely resulted in the movement of the barrier's anchors, which snagged on the southern cable. Shifted position of the cable limited the diver burial on western side.

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

Item	
1	IEM submitted an email to NH DES (on 11-23-19) providing feedback regarding Eversource/Normandeu's request to change water quality monitoring procedures for the remainder of diver burial.
2	No water quality exceedances of the BSAL were reported. No work stops or modifications were requested by the IEM.

### Action Items

Item	
1	Daily diver burial on eastern and western sides of Little Bay scheduled for the foreseeable future with a scheduled break for the Thanksgiving Holiday from the end of work on Tuesday, November 26 <sup>th</sup> through Sunday, December 1, 2019. IEM expected to be monitoring activity until completion.

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: \_\_\_\_\_



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Dated: November 24, 2019