

## July 28, 2023 Update

### 2023 Schedule and Outline of Proposed Work

#### Region 18, Lyme-Old Lyme Middle School

Turner Environmental has continued to work on the investigation and clean-up of the oil spill at the Old Lyme Middle school. Tasks have included additional testing of drinking water wells, installation of an additional recovery well in the boiler room, improving the screened interval of the three existing recovery wells in the boiler room, performed additional vac events on the recovery wells and passively recovered oil using oil absorbent oil “pigs” placed in recovery wells between vac events. We submitted a Registration for a General Permit for Groundwater Remediation Wastewater which was recently approved by the CT DEEP.

An additional off-site monitoring well was installed west of MW-13, between that monitoring well and the drinking water well at [REDACTED]. That well was developed and sampled. No results are available at this time.

Drinking water wells at [REDACTED] and [REDACTED] were retested. One trihalomethane compound was detected in the drinking water well at [REDACTED]. No contaminants were detected in the drinking water well at [REDACTED] and the compound detected in the [REDACTED] drinking water well was not associated with petroleum releases.

Additional details are provided below.

#### Correction of a Previous Update Report

Turner received a letter from Jim Vanoy of CT DPH requesting that the May 19, 2023 update memo did not accurately reflect CT DPH’s position regarding the use of Petrofix as a treatment. The previous memo stated, “We understand that there are DEEP/DPH officials are uneasy with the prospect of leaving activated carbon in the ground with this “trap and treat” technology.” It has been pointed out that the position of the DPH is a concern with nitrates. The letter further states that “We request that “DPH” be removed from this statement. During the discussion on May 4, 2023, Ryan Tetreault from DPH’s Private Well Program asked if the Petrofix product increases the level of nitrates in groundwater. You acknowledged that Petrofix products can increase nitrate levels in groundwater. Mr. Tetreault subsequently recommended that nitrates be included in the testing of nearby drinking water wells should the Petrofix product be used. During this meeting DPH staff did not make any statements or suggestions that we were “uneasy with the proposed of leaving activated carbon in the ground.””

The memo of May 19 has been revised accordingly and posted on the Region #18 website.

If this technology is proposed in the future to address off-site contaminants, all issues with nitrates will be identified and nitrate monitoring would be included in any proposed remedy.

A copy of the DPH letter is Provided in Attachment A.

### **Vac Events and Passive Oil Recovery Former Holding Tank Area and Boiler Room**

Small amounts of free product have been observed in the former holding tank area and recovery wells in the boiler room on May 30, 2023. As a result, several vac events were performed June 8, June 20 and July 11. Another vac event scheduled for July 31 was postponed until August 7, 2023. This was postponed because the disposal facility (Tradebe) is currently not accepting wastewater.

On previous dates a vacuum truck was used to evacuate liquids from the following wells – MW-14 in the former holding tank area and Recovery Wells (RW) - RW-7, RW-8 and RW-9 in the boiler room.

Vac events    Date    Total Volume    % oil

6/6/23    827 Gal.    1%    = 8.27 gal.

6/20/23    1,217 gal.    0% (if 0.5% is used as a conservative #) = 6 gal,

7/11/23    mostly solids – this vac event also removed liquids from all existing wells, however, the majority of material was soil removed as Turner vacced around existing recovery wells to evaluate screened intervals of existing wells and attempted to install additional recovery wells (as described below). Liquid and oil volumes could not be determined.

All existing recovery wells in the boiler room were evaluated. Several attempts were made to install additional recovery wells in the boiler room. Two attempts on the northwestern corner of the boiler room were unsuccessful due to obstructions encountered below the floor assumed to be foundation footings. Similarly, an attempt to install an additional recovery well along the southern wall encountered buried electrical conduits in that area and the attempt was unsuccessful. One additional recovery well was installed south of the existing recovery wells and approximately 20 feet north of the southern boiler room wall. That well was designated RW-10. It is screened from 6.8 to 16.8 fbg. An attempt to deepen MW-14 was also unsuccessful due to the area being backfilled with crushed stone. The stone collapsed as the hole was deepened - expanding beyond an area safe to work around it from the vac truck. The area was backfilled with crushed stone and existing well remains but could not be deepened. Turner has requested a proposal from a drilling company to install a deeper 4" diameter recovery well in the same area.

### **RW Screening Intervals**

All existing recovery wells (RW-7, RW-8 and RW-9) were examined.

RW-7 and RW-9 have approximately 5' of screen – despite our initial determination that the wells were originally installed with a screened interval of approximately 10 fbg. Both of these wells had additional slots cut into the casing to increase the screened interval. When they were re-installed, the screened interval is now 9' to 15' below top of casing.

RW- 8 had a hand cut screen at the bottom 20 inches of the 15.6' deep well (screened interval was approximately 14 feet below top of casing – or about three to 3.5 feet below the water table) when

examined. Turner created additional screen by cutting slots in the casing with a saws-all so that approximately 6.6 feet of screen are now present. The screened interval is now nine to 15.6 feet below top of casing.

All recovery wells are stick-up wells with screened intervals that intercept the water table.

All Recovery wells and MW-14 in the former holding tank area were examined for free product approximately twice per week in June and July. All wells also have oil absorbent “pigs” added to passively collect oil from those wells. Red staining has been observed – primarily in MW-14, the former holding tank area. Turner has tested the amount of free product collected when the pigs were stained collecting approximately 200 mL of oil from the recovery wells about twice per week. This material is being collected in a 55-gallon drum in the boiler room and will be vacced out during the next scheduled vac event.

We have observed small amounts of free product in the recovery wells. When examined, these amounts are consistently between 1/8” to 3/16” primarily in MW-14 but also observed in other RWs including RW-9 and RW-10 since its installation.

A total of approximately 3.1 L (0.82 Gallons) of oil have been recovered from the passive oil recovery pigs since they were installed in the first week of June. In general, the volume of free product observed in the RW and MW-14 appears to be decreasing slightly since the vac events were performed. No “significant rebound” effects were observed after the vac events.

Turner conservatively estimates approximately 15 gallons of oil have been recovered from passive and active recovery methods since these efforts began in June.

### **Additional Monitoring Wells**

Previous sampling and analyses of monitoring wells on and off-site indicate some volatile organics were detected in off-site monitoring wells. As a result, DEEP suggested installation of an additional monitoring well west of MW-13 located between that monitoring well and the drinking water well at [REDACTED].

A new monitoring well was installed on July 17 and developed that day. The well was subsequently sampled on July 24, 2023. Results of analyses for VOCs, ETPH and PAHs are pending.

The location of the new monitoring well along with all existing monitoring wells and groundwater contours using recent data (July 28, 2023) water table elevations) are shown in Figure 2.

### **Off-site Drinking Water Wells**

Drinking water well at [REDACTED] and [REDACTED] was tested on June 30, 2023. No ETPH or PAHs were detected in those samples. No VOCs were detected in the [REDACTED] drinking water sample. Low concentrations of Chloromethane at 1.2 ug/L were detected in the [REDACTED] drinking water sample. This compound is NOT related to petroleum and not associated with any VOCs reported in off-site monitoring wells. It is likely from chlorine discharged to a nearby septic system reacting with other organic compounds.

Both drinking water wells were also sampled and analyzed on July 27, 2023. No VOCs were detected in either of these drinking water wells.

A table of the drinking water sample collection dates is provided in Attachment A. The laboratory reports are provided in Attachment B.

Figure 3 shows the nearby drinking water wells, the monitoring well network and location of the plume based on the information previously collected.

### **Work Plan for Remediation**

Turner has prepared and on June 29, 2023, submitted a Registration for a General Permit for the Discharge of Groundwater Remediation Wastewater for a groundwater pump and treat system to collect and treat water from the former holding tank area and the boiler room. This is the area most highly impacted by heating oil at this time. This Registration was approved by the CT DEEP on July 25, 2023.

The treatment system will collect contaminated groundwater from up to three recovery wells and pump it to an approximately 560-gallon oil/water separator. A float control will activate a transfer pump that will pump the water side of the oil/water separator through two- 1,000-pound activated carbon vessels to remove dissolved contaminants. The treated water will meet all discharge concentrations specified in the General Permit. Treated water will be discharged to an underground stormwater detention structure located southeast (slightly up-gradient) of the former holding tank area and boiler room where the initial pumping will occur. Discharge to the same aquifer will also eliminate removal of groundwater from the system which serves several shallow drinking water wells in the vicinity of the school.

Installation of the treatment system is now underway. Additional outstanding items are a trench for the discharge line and delivery and set up of the treatment system components. The Pump and Treat system is anticipated to become operational in August 2023. The pump and treat system will operate initially in the former holding tank and boiler room where the oil concentrations are the highest. The same system is expected to be used in the future on the western portion of the building, in the direction the plume is moving so as to intercept it. This future use of the system would not be implemented until the contaminant concentrations in the release area (former tank area and boiler room) are substantially reduced.

Shoring and dewatering in the area in the vicinity of the former holding tank to remove deeper soils discovered several feet below the water table has been evaluated. Due to the proximity of the building, steel pilings up to 50 feet long would be necessary along the southern building wall. Proposals for that dewatering and excavation work were obtained, and the costs were estimated to be in the range of \$900,000 to \$1.4 million to complete. The lower cost range would result in leaving steel pilings in the ground permanently and would alter groundwater flow in the area. Due to the extremely high cost of this remedial option and other potential negative consequences, we currently believe other options are available that could be more cost effective and not disrupt groundwater flow in the remedial area. These could include in-situ chemical oxidation or other injectable materials to promote biodegradation of the petroleum identified in deeper soils. All remedial strategies will be identified and further evaluated in a

Remedial Alternative Evaluation that will be prepared for the site and submitted pursuant to Section B.1.f. of Consent Order COWSERU 23-001.

Notwithstanding the Consent Order process, Turner is evaluating whether the recovery wells should be moved to the west side of the building when contaminant concentrations are considerably reduced and where we believe the plume will eventually “daylight”. ORC type compounds or ISCO chemical injections could be used on the southern portion of the building in the former holding tank area and/or boiler room which would then be drawn through the same pathway as any released petroleum compounds to provide a “polish” treatment and draw the injectable mitigation compounds beneath the building toward the western portion of the property where natural groundwater flow may be taking them.

Any petroleum contaminants not captured by the initial pump and treat operation would then be drawn to recovery wells on the western side of the building (area of MW-7) and collected for treatment, again providing hydraulic control and treatment if some contaminants escape the zone of influence of the wells in the boiler room while the pump and treat system operated on the southern portion of the building.

Remedial options on the western side of the building where low concentrations of VOCs have been detected and are moving off-site will need further evaluation and potential remedial strategies developed for the VOCs detected there which could potentially use ORC or “trap and treat” technologies in the future.

Proposed “trap and treat” methods will also be evaluated to reduce the VOC concentrations in groundwater along the downgradient portion of the school property and potentially for any impacted off-site property.

This letter represents Turner’s preliminary proposals as to methods to initiate the remediation of the impacts of the oil spill to soil and groundwater based on the most recently acquired data. Currently our focus is implementation of the pump and treat system on the southern portion of the site and continued testing of the monitoring and drinking water wells. The details of the site investigation performed to date, a scope of study for further investigation, and ultimately an Investigation Report, Remedial Alternatives Evaluation, Remedial Action Plan and Monitoring Plan will be submitted to the department as required by the Consent Order. We are currently working on the Scope of Study that discusses all investigation activities that have been completed and identifies any additional investigation necessary to fully evaluate remedial alternatives.

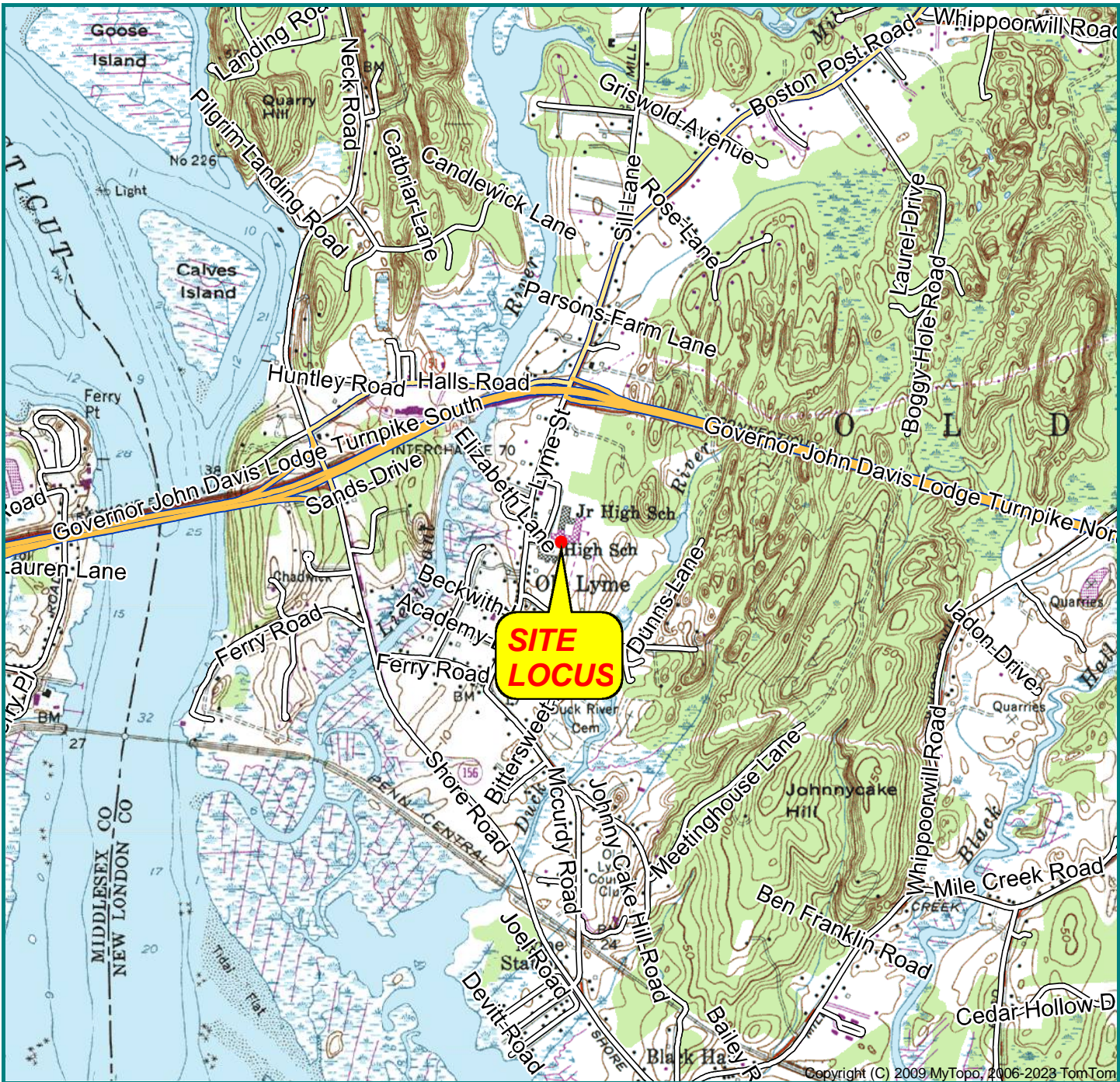
Respectfully submitted,

**TURNER ENVIRONMENTAL, LLC**



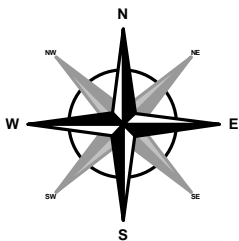
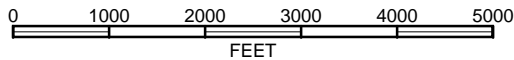
David T. Turner, LEP  
Attachments

Figures



OLD LYME Topographic 1958 41072-C3-TF-024 National Geodetic Vertical Datum 1929

SCALE 1:24000



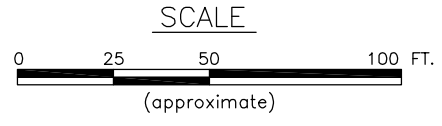
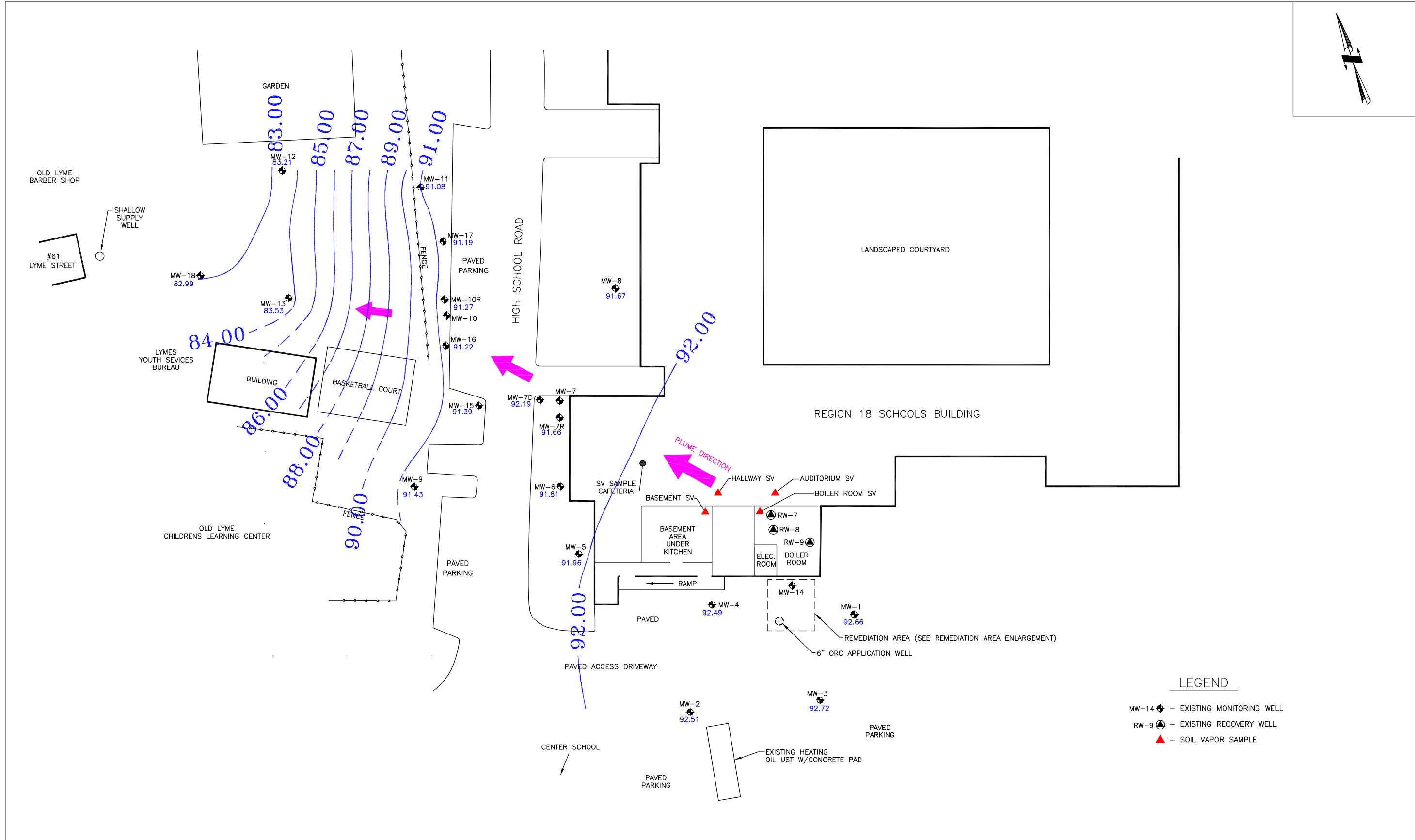
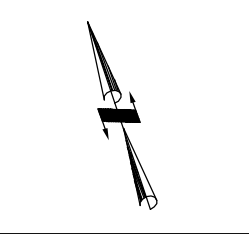
Site Coordinates:  
 041° 19' 04.35" N, 072° 19' 42.04" W

Turner Environmental LLC  
 P.O. Box 581, East Lyme, CT 06333  
 (860) 705-8704 turnerenviro@att.net

Site Location:  
 47 Lyme Street  
 New London County,  
 Old Lyme, CT

**Figure-1**  
**Site Locus Map**

Project: TE 23-007 Date: 3/9/23



<b>Turner Environmental LLC</b> P. O. Box 581 East Lyme, CT 06333 (860) 705-8704 turnerenviro@att.net	<b>Figure 2 - Groundwater Contours</b> (7/28/23 gauging data)	Drawn: K. Hazel Date: 7/31/23 Scale: AS SHOWN
	Client: REGION 18 SCHOOLS 47 Lyme Street Old Lyme, Connecticut	Project: TE23-007 Figure: FIGURE 2



Attachment A:  
CT DPH Letter  
Requesting Clarification

# STATE OF CONNECTICUT

## DEPARTMENT OF PUBLIC HEALTH

Manisha Juthani, MD  
Commissioner



Ned Lamont  
Governor  
Susan Bysiewicz  
Lt. Governor

### Environmental Health Section

June 29, 2023

David Turner  
Turner Environmental LLC  
P.O. Box 581  
East Lyme, CT 06333

RE: May 19, 2023 Update Report, Region 18 Lyme-Old Lyme Middle School

Mr. Turner:

The Department of Public Health is requesting that you provide a clarification update to the May 19, 2023 report that was shared via email on May 22, 2023 with staff at the Connecticut Department of Public Health, Connecticut Department of Energy and Environmental Protection, and Region 18 Lyme-Old Lyme Schools regarding the status of remediation actions at the Region 18 Lyme-Old Lyme Middle School.

On page four of the May 19, 2023, report, it states "We understand that there are DEEP/DPH officials are uneasy with the prospect of leaving activated carbon in the ground with this "trap and treat" technology." We request that "DPH" be removed from this statement. During the discussion on May 4, 2023, Ryan Tetreault from DPH's Private Well Program asked if the Petrofix product increases the level of nitrates in groundwater. You acknowledged that Petrofix products can increase nitrate levels in groundwater. Mr. Tetreault subsequently recommended that nitrates be included in the testing of nearby drinking water wells should the Petrofix product be used. During this meeting DPH staff did not make any statements or suggestions that we were "uneasy with the proposed of leaving activated carbon in the ground."

Thank you for your attention to this matter. Please feel free to contact me with any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "J. Vannoy".

Jim Vannoy, MPH  
Environmental Health Section Chief  
Connecticut Department of Public Health

c: Ian Neviasser, Superintendent of Schools, Region 18 Schools  
Lisa Michelle Morrissey, MPH, Deputy Commissioner, CT Department of Public Health  
Lori Mathieu, Branch Chief, Environmental Health and Drinking Water, CT Department of Public Health  
Stephen Mansfield, Director of Health, Ledge Light Health District



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