

June 15, 2023 Update

2023 Schedule and Outline of Proposed Work

Region 18, Lyme-Old Lyme Middle School

Turner Environmental has performed additional testing of drinking water wells and identified and removed free product from two wells in the former holding tank area and in the boiler room. Since our last update on May 19, 2023 the following tasks have been completed or are proposed.

Drinking water wells at [REDACTED] and [REDACTED] were retested. No contaminants detected in either well.

During sampling of MW-14 in the former holding tank area on May 30, some red “free product” (FP) was identified in that well. Similarly, a red colored FP was observed in Recovery Well (RW)-7 in the boiler room. Approximately 3/16 inch to ¼ inch of FP was observed and subsequently removed and containerized. A vac event was performed on June 8 on MW-14 and all Recovery Wells (RW) in the boiler room.

Additional details are provided below.

Outdoor Investigation/Remediation

Previous investigation of the former holding tank area was performed on reported in May. Residual contamination is present below the water table in the area of the former holding tank at depths from 7.5 fbg to 12 feet below grade (fbg). Samples from the northwest portion of the remedial excavation showed visual signs of contamination with gray to black staining. This material had elevated concentrations of volatile organic compounds detected using a photoionization detector (PID). Elevated ETPH concentrations were detected upon analysis. The soil sample from the northwest portion of the remedial area is in a downgradient location from the former holding tank. Analyses showed low concentrations of ETPH in the 9-10' samples, but very high in the 10-10.5 ' sample – 14,100 mg/kg ETPH. ETPH was <50 mg/kg in the 12-13' sample from this boring. This indicates a relatively thin layer of soils with elevated ETPH. In our opinion, this also suggests the ETPH was released from the former UST as opposed to a released from the surface since it was detected at deeper depths but not in samples from the same boring directly above which are also below the water table.

Samples from the southwest and northeast portions of the former tank remedial excavation were much lower and below their respective criteria. The samples from the southeast portion of several showed one sample slightly over the ETPH criteria at 11-12' bgs at 532 mg/kg. Based on the observations and results from this sampling, the most significantly contaminated soil is in the northwest portion of the remedial area - downgradient from the former UST. The sampling results are summarized in Table 1 which is provided in Attachment A. Boring locations have been added to Figure 4.

Due to the proximity of the building foundation, presence of groundwater and necessary depth of excavation - extensive shoring will be necessary to perform this excavation. We have obtained a bid for shoring, dewatering and excavation of this area which is currently being evaluated.

The area has a variety of underground utilities including UST monitoring communication lines, electrical service, and the fuel lines from the fuel oil UST to the boiler room. The area is also close to the school

building and its footings. Some utility work or relocation will likely be necessary to perform excavation in this area.

Dewatering will require wastewater be hauled to a permitted facility or obtaining an Emergency Authorization or a General Permit prior to dewatering. We are preparing an application for the General Permit for the Discharge Groundwater Remediation Wastewater for a long term pump and treat system that could also be used for treatment of dewatering wastewater.

Additional Monitoring Wells

Based on the previous detection of contaminants in the off-site wells on the western abutting property three additional monitoring wells were installed on the western portion on the school property. All monitoring wells on-site were resampled on May 20, 2023. All wells were analyzed for ETPH and VOCs. Results are summarized in a table provided in Attachment A.

A site plan showing all monitoring well locations including the new wells (MW-15, MW-16 and MW-17) is also provided (See Figure 2) including groundwater flow directions.

An additional off-site monitoring well has been suggested closer to the drinking water well at [REDACTED] as a sentinel well. We have not obtained permission to install an additional well on that off-site property at this time.

Off-site Drinking Water Wells

Drinking water well at [REDACTED] were tested again on April 26, 2023. They were tested for VOCs only. No VOCs were detected in those samples. The laboratory report is provided in Attachment B. These two drinking water wells will be resampled again for VOCs only the week of June 26.

A table of the drinking water sample collection dates is provided in Attachment B. The locations of the private drinking water wells with respect to the monitoring well network is provided as Figure 4. The limited information found on the well construction was provided in our previous update letter.

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

Soil Vapor Sampling

Sub slab soil vapor sampling was previously reported. While some low concentrations of several VOCs were detected, all concentrations are well below (orders of magnitude) their respective Residential Soil Vapor Criteria. In our opinion soil vapor is not a concern at the site.

Work Plan for Remediation

Recent correspondence from DEEP indicates an expectation for dewatering to begin at the end of the school session. As previously stated, small amounts (approximately 3/16 inch) of FP were observed in MW-14 in the former holding tank area starting May 30. A small amount of free product was also observed in RW-7 in the boiler room. Free product was removed using a bailer on several occasions

including May 30, 31 and June 1, 2, 3, 4, 6, 7, 9 and 11. All liquid collected was containerized in a 55-gallon drum. A vac event using ACV Enviro was performed on June 8. A vac truck was used to evacuate liquids from MW-14, RW-7 RW-8 and RW-9 several times over a six hour period cycling through these wells.

A total of approximately 727 gallon of total liquid was removed from the wells including an additional 100 gallons of liquid from two 55-gallon drums (mostly purge water and well development water plus what was collected from bailing). Based on information provided by Tradebe, the disposal facility, the material was approximately 1% oil, therefore approximately 8.3 gallons of oil were removed. In addition, we know that the groundwater was contaminated by exposure to oil so over 700 gallons of contaminated water was also removed from the area.

Another vac event on these wells is scheduled for June 20, 2023 to continue to remove contaminated water and free product from the wells. In general, the amount of free product observed appears to have diminished in MW-14 following the vac event.

We are ordering an approximately 8,000-gallon weir tank to collect additional water from the former holding tank area and the recovery wells in the boiler room. We will use suction pneumatic pumps to collect water and oil, if present, from those wells. The tank will be used as a holding tank which will be emptied by vac truck until a discharge permit is obtained. Upon receipt of approval for the proposed permit the contaminated water will be treated through the treatment system and discharged to the school stormwater system.

The current plan for remediation includes dewatering and excavation of deeper contaminated soils in former holding tank area. Dewatering will require shoring of the building foundation and the area around the former holding tank to restrict groundwater infiltration.

Water from tank dewatering will be hauled to a permitted facility or treated and discharged under a General Permit for the Discharge of Groundwater Remediation Wastewater.

Water would be extracted from multiple extraction points around the former UST area within the shoring.

In this case the General Permit we are seeking requires DEEP Approval. Once the permit is obtained water would be treated by a treatment system designed to remove petroleum which includes an oil water separator or a frac tank, carbon treatment and bag filters prior to discharge. At this point we believe the discharge location will be a storm sewer system at the school.

We have contacted CT DEEP Permitting and Enforcement personnel regarding this permit. There is a provision of the General Permit that would allow Wastewater to be discharged back to the ground. We believe the most suitable discharge location may be a stormwater retention gally located east of Center School approximately 120 feet south of the boiler room. This is an upgradient location from the remedial area so discharged water would not be totally removed from the aquifer and would recharge the groundwater removed from the recovery wells. Based on requirements in the General Permit we have more than adequate setbacks from all drinking water wells in the area including the school and nearby private drinking water wells.

Once we have received approval of the General Permit, our proposed treatment system would be used to treat contaminated groundwater. The treatment system will pump water from three proposed locations which may include the former holding tank area, the boiler room and a third pump from a well on the eastern portion of the building at the approximate location of MW-7 where the plume appears to daylight.

The treatment system would be modified slightly after an initial period of operation to a smaller automated system. The extraction point on the west side of the building will provide limited hydraulic control.

Future Work

A substantial amount of the necessary site characterization work is complete.

Based on the discovery of contaminated soil at depth in the former holding tank remedial area, we are evaluating remediation strategies for this area.

The registration for the General Permit will be submitted on the week of June 19, 2023. Once a DEEP approval is received, water will be pumped and treated prior to discharge. The proposed treatment will include a frac tank or oil water separator and activated carbon treatment as well as solids removal using bag filters prior to discharge.

Due to the proximity of the building, the sandy nature of the soils and depth to groundwater, and buried utilities we further evaluating remedial strategies in this area. This will be discussed in the remedial alternatives analysis required by the Consent Order.

The pump and treat system can be used for treatment of groundwater from the former holding tank area, and the boiler room where high concentrations of ETPH and VOCs have also been detected. We will also determine the need and timing of adding a recovery well or trench on the western side of the building/property based on the results of additional sampling and contaminant concentrations and locations. This would provide at least some hydraulic control where the plume daylights from beneath the building.

It is our opinion that observation of VOCs on the western portion of the property and off-site are the result of an older heating oil release from the former holding tank. This is supported by soil contamination in the former holding tank area being found at deeper depths with no contamination in soils directly above it. These samples are well below the water table and the absence of VOCs in the deeper samples, widespread anaerobic groundwater conditions and the large distance the plume has traveled all seem to support this is an historic release. All of these observations are consistent with an earlier release of heating oil from the same area. The remedial actions proposed will need to address both the former release and more recent oil spill which appear to impact overlapping areas.

Groundwater that has already migrated off-site can not be effectively recovered. We previously proposed "trap and treat" methods could quickly reduce the VOC concentrations in groundwater, we understand

there is resistance to leaving activated carbon in the ground. However, it is our opinion that this would still be effective particularly along the downgradient portion of the school property line.

This is the current status based on the most recently acquired data. We understand that details of the previous site investigations and a remedial alternatives analysis must be submitted to the department.

The registration for the General Permit will be submitted the week of June 19, 2023.

A vac event is scheduled for June 20, 2023. Additional vac events will be used to remove water from the impacted area (or frac tank).

An 8,000 gallon weir tank should be delivered to the site by June 29, 2023 and will be used to collect impacted water and oil if present from the former holding tank area and boiler room. It will be vacced out as necessary until the General Permit we are seeking is approved.

Once approved a pump and treat system will be activated to collect, treat and discharge water impacted by the spill to the school stormwater system. The proposed discharge location is shown in Attachment C.

Respectfully submitted,

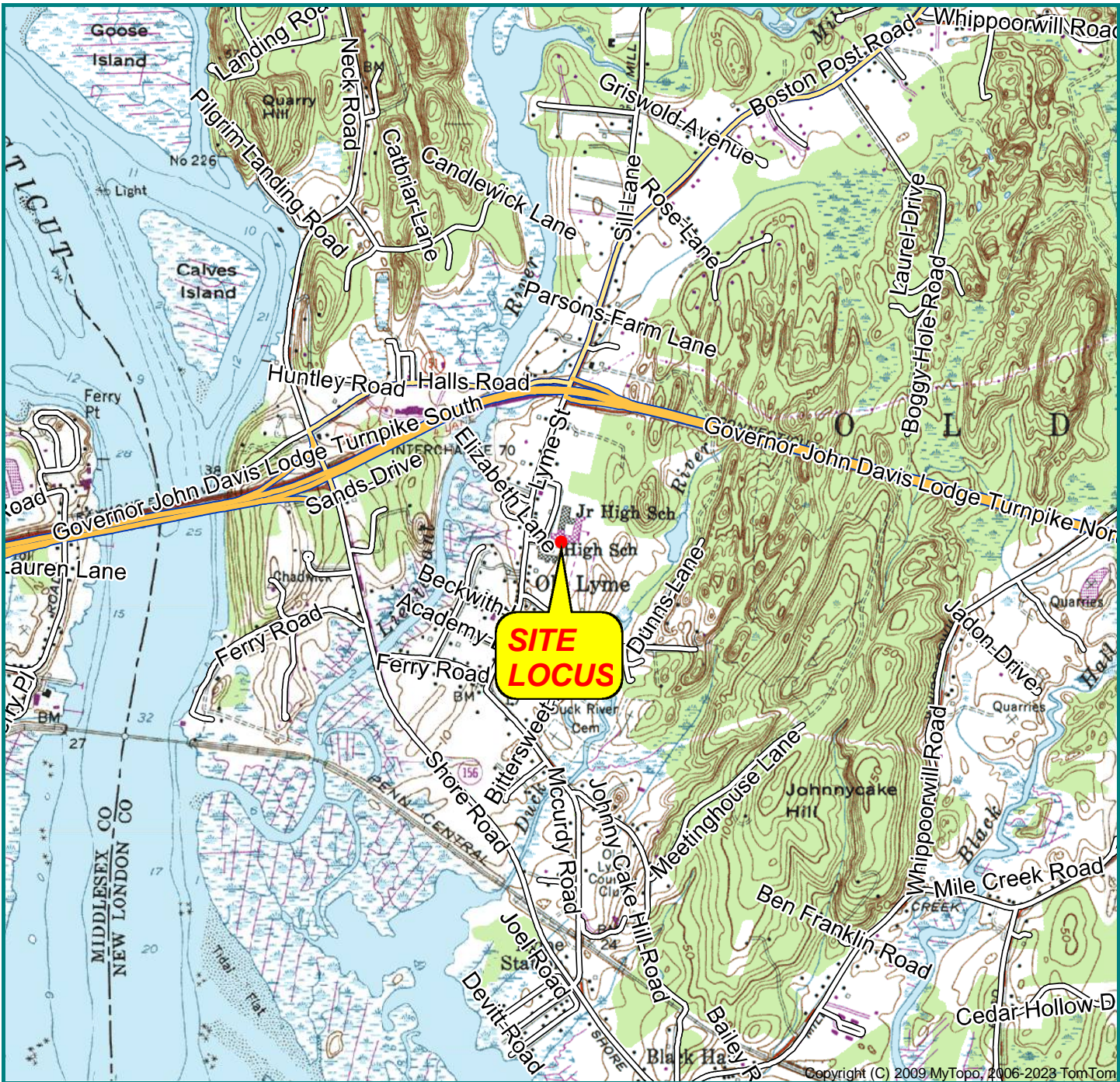
TURNER ENVIRONMENTAL, LLC



David T. Turner, LEP

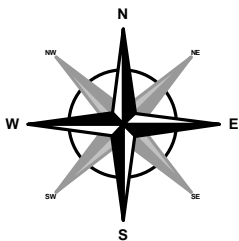
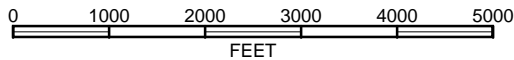
Attachments

Figures



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

SCALE 1:24000



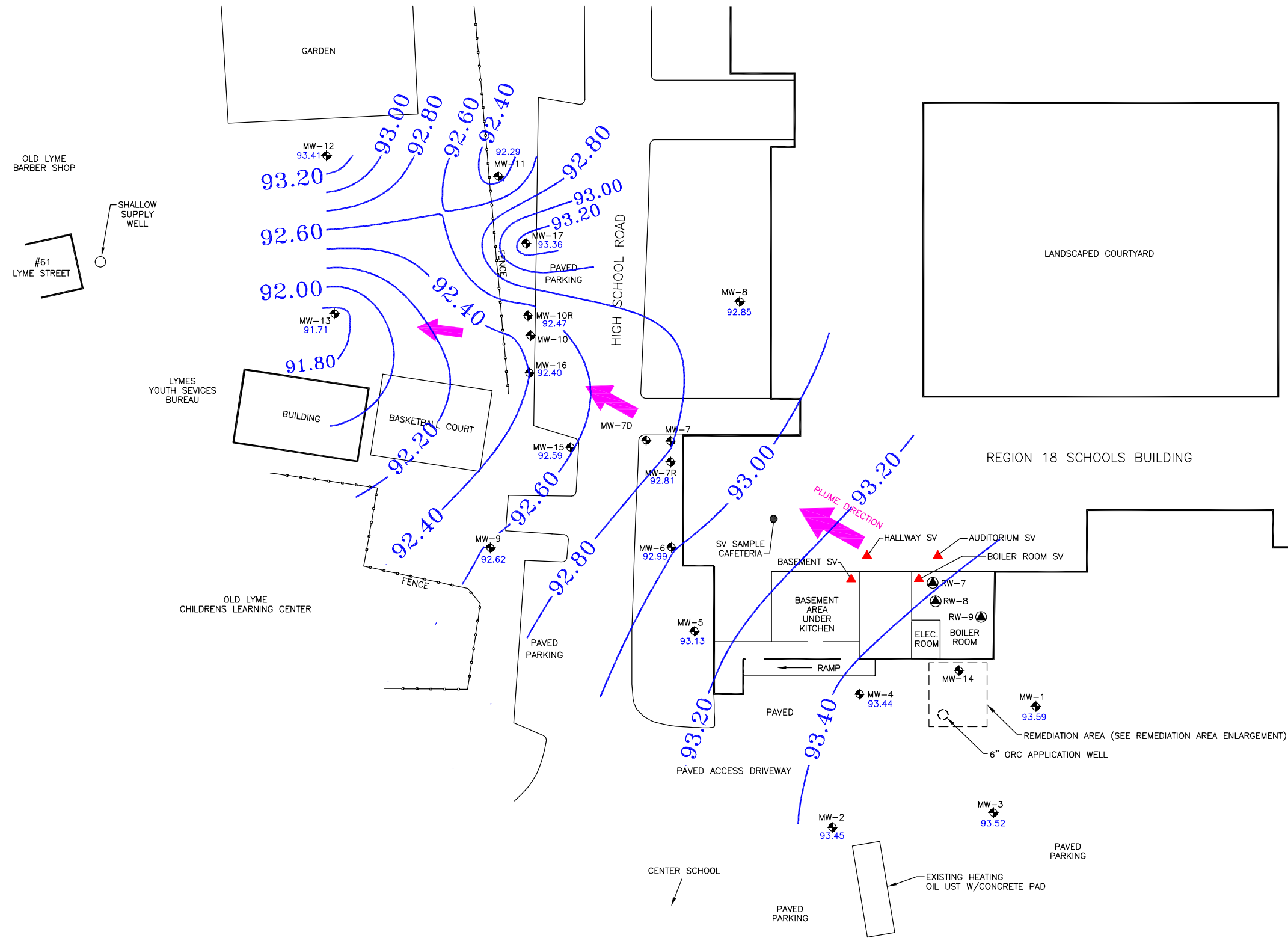
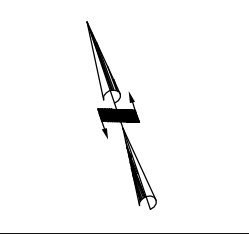
Site Coordinates:
 041° 19' 04.35" N, 072° 19' 42.04" W

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

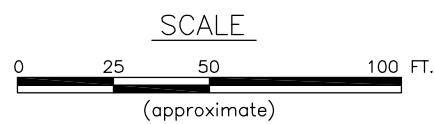
Project: TE 23-007 Date: 3/9/23

Figure-1
Site Locus Map

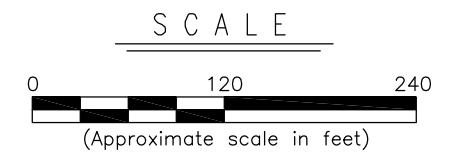
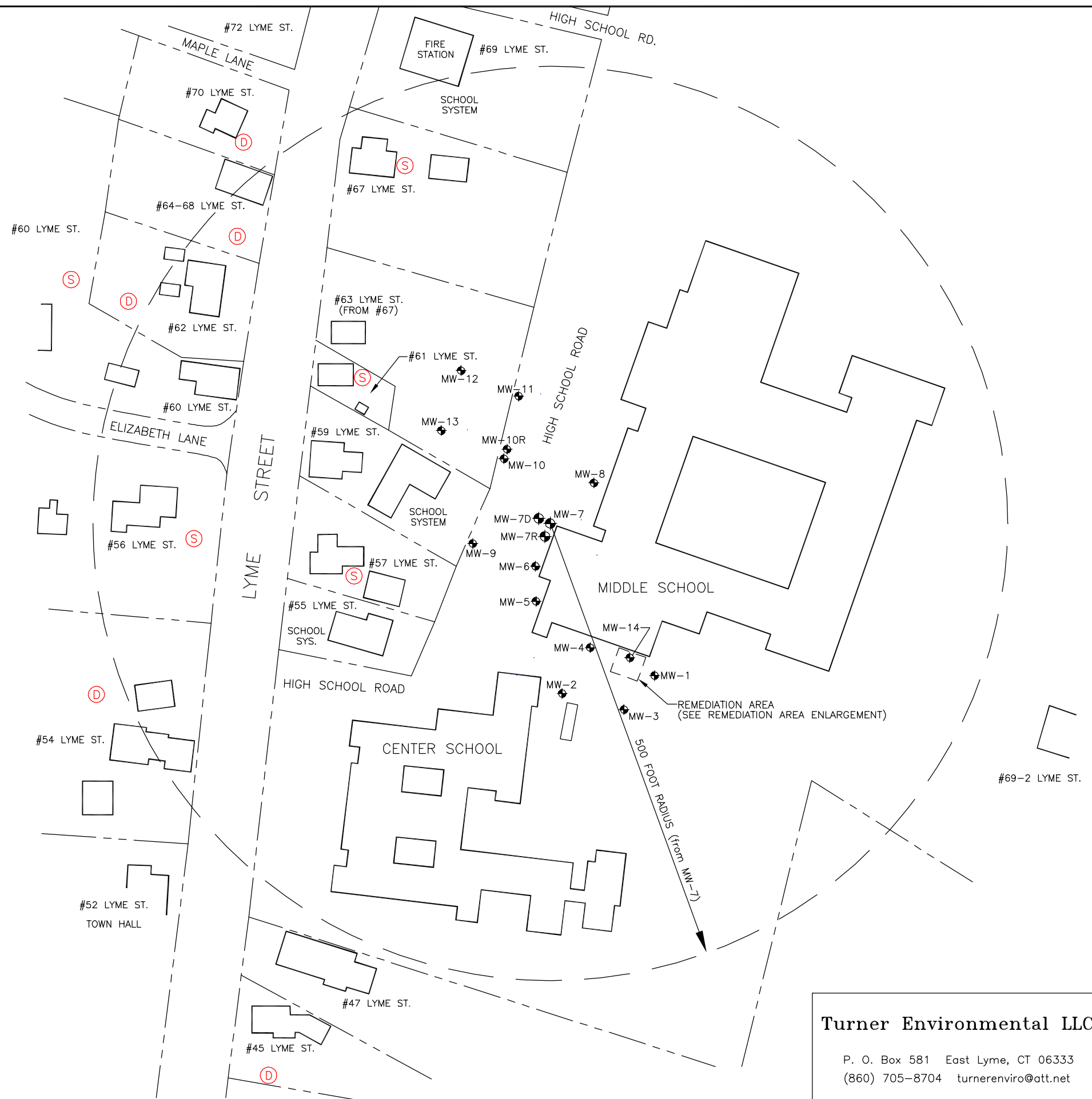


LEGEND

- MW-14 - EXISTING MONITORING WELL
- RW-9 - EXISTING RECOVERY WELL
- SOIL VAPOR SAMPLE

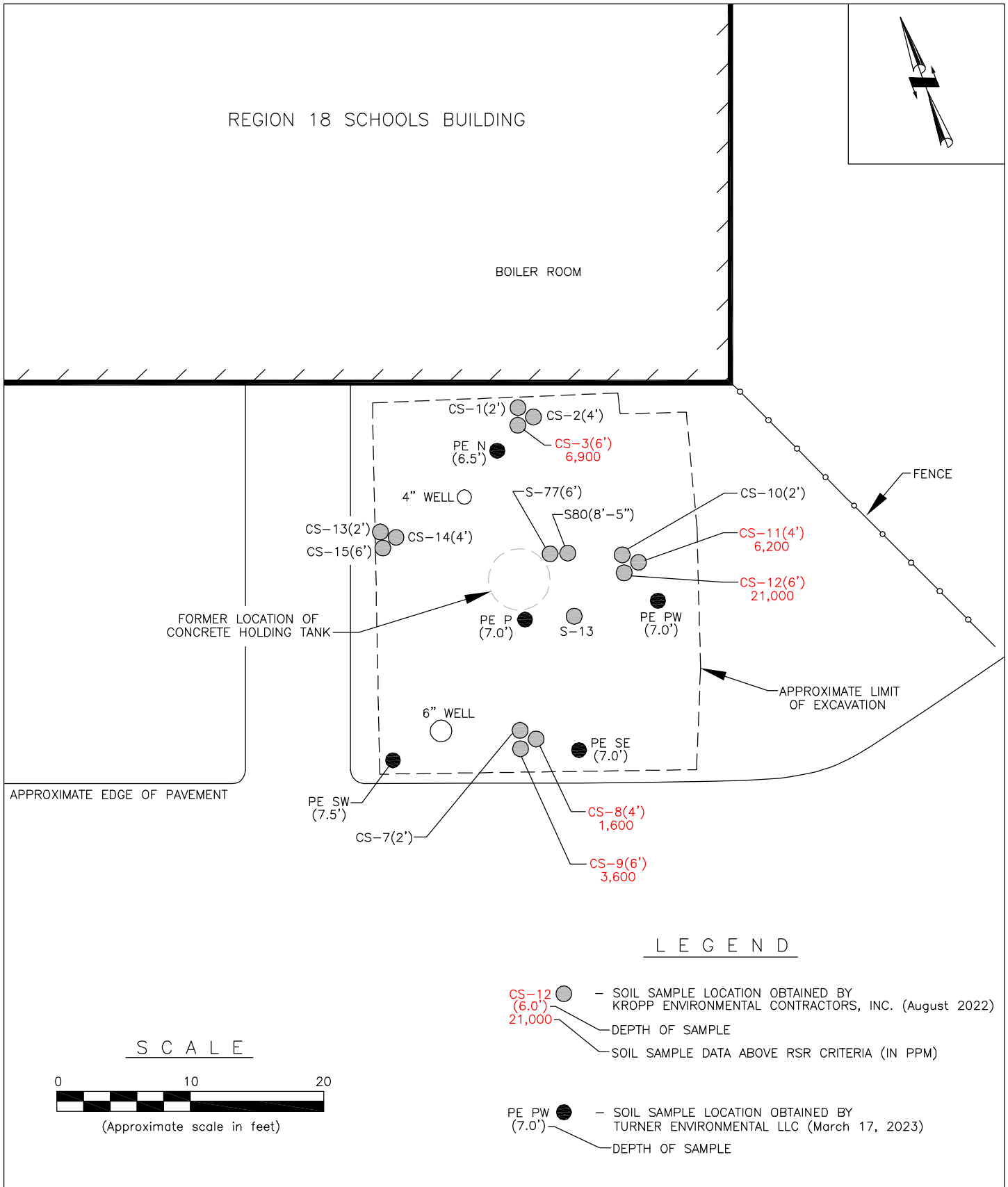


Turner Environmental LLC P. O. Box 581 East Lyme, CT 06333 (860) 705-8704 turnerenviro@att.net	Figure 2 - Groundwater Contours (5/16/23 gauging data)	Drawn: K. Hazel Date: 5/30/23 Scale: AS SHOWN
	Client: REGION 18 SCHOOLS 47 Lyme Street Old Lyme, Connecticut	Project: TE23-007 Figure: FIGURE 2



- LEGEND**
- MW-7 - GROUNDWATER MONITORING WELL
 - - - - - APPROXIMATE PROPERTY BOUNDARY
 - SHALLOW SUPPLY WELL
 - DEEP SUPPLY WELL

Turner Environmental LLC P. O. Box 581 East Lyme, CT 06333 (860) 705-8704 turnerenviro@att.net	Figure 3 - Drinking Water Well Locations	Drawn: K. Hazel Date: 4/22/23 Scale: AS SHOWN
	Client: REGION 18 SCHOOLS 47 Lyme Street Old Lyme, Connecticut	Project: TE23-007 Figure: FIGURE 3

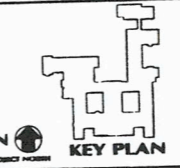


<p>Turner Environmental LLC P.O. Box 581 East Lyme, CT 06333 (860) 705-8704 turnerenviro@att.net</p>	<p>Figure 4 Remediation Area Enlargement</p>		<p>Drawn: K. HAZEL</p>
			<p>Date: 4/22/23</p>
			<p>Scale: As Shown</p>
	<p>Address: 49 Lyme Street Town of Old Lyme, New London County, Connecticut</p>		<p>Project: TE 23-007</p>
			<p>Figure: FIGURE-4</p>

Attachment A
Monitoring Well Summary Table

Attachment C:
Proposed Remedial System
Locations

3256



FOR ALL MODIFICATIONS, SPECIAL CONDITIONS, GENERAL NOTES AND FIELD NOTES, SEE SHEETS 01-1 TO 01-20.



RENOVATIONS TO THE CENTER ELEMENTARY SCHOOL
 49 LYME STREET
 OLD LYME, CONNECTICUT 06371
 STATE PROJ. #218-0033 A
 STATE PROJ. #218-0029 SA/ENV
 STATE PROJ. #218-032 EA



SITE GRADING & UTILITIES

PROJECT NO. 0002
 SHEET NO. 0001
 DATE: 07/21/08
 SCALE: 1"=40'
C1.01

These prints are half size scale noted

received 7-1-08
 232
 2007
 Chris O'Connell

CREST GRAPHICS
 BK CHANLER

John Bull
 4-14-030
 # 3256

DRAWING NUMBER
 3256

DRAWING NUMBER
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