

State of Oregon
Department of Environmental Quality

Memorandum

Date: February 15, 2023

To: FILE

Through: Nancy Sawka, Acting Program Manager
Don Hanson, Lead Worker

From: Ellen Woods
Western Region

Subject: Rogue Primary School, ECSI #6520; Staff Memorandum in support of a Conditional No Further Action determination

This document presents the basis for the Oregon Department of Environmental Quality's (DEQ's) recommended Conditional No Further Action (CNFA) determination for the Rogue Primary School, in Central Point. As discussed in this report, contaminant concentrations in soil and groundwater are below acceptable risk levels for school children and occupational receptors. Institutional controls are required to protect future construction workers from residual soil and groundwater contamination that exceeds acceptable risk levels.

The proposed CNFA determination meets the requirements of Oregon Administrative Rules Chapter 340 Division 122, Sections 010 to 0140; and ORS 465.200 through 465.455.

The proposal is based on information documented in the administrative record for this site. A copy of the administrative record index is presented at the end of this report.

1. BACKGROUND

Site location.

Figure 1 depicts a vicinity map for the site. The site's location can be described as follows:

- Address: 615 South 2nd Street, Central Point, Jackson County Oregon
- Latitude 42.3695° North, longitude 122.9114° West
- Jackson County map and tax lot 372W11BC 5200, Township 37 South, Range 01 West, Section 11 BC

Site setting.

The Rogue Primary School is approximately 5.68 acres and houses a newly constructed main building (approximately 39,000 square feet) located in the center of the property and a secondary building (approximately 4,500 square feet) located to the northwest. The site entrance is a paved driveway located on South 1st Street.

The site is surrounded by mostly residential neighborhoods. Central Point Elementary School is located one block north. Directly west are some commercial properties and South Front Street (Hwy 99) running north to south.

Physical setting.

The site is located approximately 1,280 feet above mean sea level with topography sloping downgradient to the north. According to boring logs, the soils encountered at the site are mostly lean clay with pockets of elastic silt and some sand. According to site investigation reports submitted to DEQ, there are two aquifers that lie beneath the site. One is shallow, which was encountered approximately around 4 feet below ground surface (bgs) during boring advancements. The second is a deeper aquifer approximately over 120 feet bgs encountered in the drilling of water wells in the area, according to Oregon Water Resources Department (OWRD). During site assessment on May 4, 2022, the contractor estimated that shallow groundwater flow is to the northeast. The nearest surface water is Mingus Creek located approximately 800 feet east of the site.

Site history.

Prior to 1960, the site was a larger parcel with some farm buildings in the area. The surrounding residences and roads were not present. A photograph from 1962 shows the former building occupying the property. The building was used as a medical facility and hospital. In March of 1996, Asante Genesis Rehabilitation Center purchased the property and owned it until May 2018, when Jackson County School District #6 became the current owner. The school district is currently remodeling the two buildings to create a new learning center with classrooms.

2. BENEFICIAL LAND AND WATER USE DETERMINATIONS

Land use.

Prior to the purchase of the property by the school district, the property had been in commercial use since the 1960s as a medical facility. During this time, the property was zoned C-2(M), Commercial – Medical District. The zoning for the property was rezoned in December 2019 and is now zoned Civic. It is highly likely the property will continue to be used as school for the foreseeable future. The current features of the site are depicted in Figure 2.

Properties to the north, south and east are zoned Residential and properties to the west are zoned Commercial.

Groundwater use.

The site does not use groundwater for beneficial uses since it is supplied by City of Central Point water supply. Drinking water for the area surrounding the site is also provided by the municipal supply. Future beneficial use of groundwater at the site is not anticipated. The Oregon Water Resources well database shows 33 wells within Section 11. Most of these wells were drilled before 1970 and they do not have an accurate location. The closest well identified was approximately 2,600 feet southeast and upgradient of the site. The groundwater flow direction at the site is towards the northeast.

Surface water use.

The nearest surface water body is Mingus Creek, approximately 800 feet to east of the site. Mingus Creek discharges into Bear Creek, approximately 1.6 miles north of the site. Bear Creek flows into the Rogue River, approximately 5.5 miles north of the site.

Stormwater runoff is unlikely to come into contact with residual contamination at the site. The majority of the site is developed with buildings, asphalt, concrete and other impermeable surfaces. The highest concentration of contamination left at the site is under the main driveway and right-of-way, which is capped in concrete and pavement.

Rainfall at the site is directed by downspouts and collection basins to a subsurface drainage system that discharges to the city stormwater system. During the recent school renovation, a shallow (< 4 feet in depth) stormwater detention pond was constructed on the southwest corner of the property, near the main entrance, to contain excess stormwater during high precipitation events. The pond was constructed with a bioswale and is designed to filter stormwater runoff as it flows in and out of the pond.

Contamination was encountered during the pond's construction. This prompted an excavation where approximately 200 tons of petroleum contaminated soils (PCS) were removed for disposal. The sides and bottom of the pond are not believed to contact residual soil contamination at the site (Figure 3). Additionally, the pond is situated crossgradient from the areas of remaining soil and groundwater contamination and the depth of the pond is above the static shallow groundwater level at the site (approximately 10 feet bgs). Thus, it is unlikely that stormwater that enters the pond will come into contact with residual contamination at the site.

3. INVESTIGATION AND CLEANUP WORK

Soil excavation was conducted in March 2022 as a part of constructing the new school building and installation of underground utilities at the site. A concrete structure was encountered southwest of the new building during the excavation activities. The structure was confirmed to be a concrete vault measuring approximately 10 feet wide by 18 feet long by 6 feet deep, with a lid at approximately 3 feet bgs, and was used to store petroleum products. PCS was discovered during the process of removing soil around the vault. The discovery of PCS was reported to DEQ who opened ECSI #6520.

The remains of the concrete vault, its contents, and surrounding PCS were excavated for removal by disposal in March 2022. A total of 254 tons of petroleum contaminated materials were disposed of at Dry Creek Landfill. The final excavation area was approximately 22 feet by 35 feet and 8 feet deep. Excavation of soil from the south and east sidewalls was performed until the presence of utility lines prevented additional digging. There was visibly stained soil on the bottom and sidewalls of the final excavation. Water that had accumulated in the southwest corner of the excavation had a visible sheen, but there was an insufficient volume of water for sampling.

Nine soil samples were collected from the bottom and sidewalls of the excavation area. All samples were analyzed for total petroleum hydrocarbons (TPH) as diesel and lube oil, volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and heavy metals (cadmium, chromium and lead). The highest concentrations of diesel (16,100 milligram/kilogram [mg/Kg]), lube oil (7,060 mg/Kg), and naphthalene (18.5 mg/Kg) detected in the soil samples exceeded several residential, occupational and/or construction worker soil risk-based concentrations. The results of this investigation prompted additional assessment and delineation of soil and groundwater contamination at the site.

In May 2022, ten borings were advanced to assess soil and groundwater conditions in the vicinity of the concrete vault and in the South 1st Street right of way. Ten soil samples and five groundwater samples were analyzed for TPH (gasoline, diesel and lube oil), VOCs, PAHs and heavy metals. The highest concentrations of diesel in soil were detected west and southwest (4,720 mg/Kg and 937 mg/Kg, respectively) of the concrete vault at approximately 5 feet bgs, and north (1,100 mg/Kg) of the concrete vault excavation at approximately 7.5 feet bgs. The highest concentrations of gasoline in soil were also detected in these areas: west of the excavation at approximately 5 feet bgs (781 mg/Kg) and north of the excavation at approximately 7.5 feet bgs (591 mg/Kg).

An additional soil and groundwater sampling event, in addition to a soil gas investigation, was completed in July 2022 to further define the extent of contamination. One soil sample was analyzed for TPH as gasoline and gasoline was not detected. One groundwater sample was collected and analyzed for TPH as gasoline, diesel and lube oil and diesel was detected at a concentration of 1,480 µg/L. Two soil gas samples were collected and analyzed for gasoline and naphthalene. Both samples had relatively low detections of gasoline (2,300 micrograms per cubic meter air [µg/m³] and 900 µg/m³) and naphthalene was not detected in either sample.

During the excavation of soil for the stormwater detention pond south of the concrete vault in August 2022, a used oil pan with oil and PCS was discovered. The PCS in the immediate area of the oil pan was removed for disposal at Dry Creek Landfill. Additional soil removal was conducted with a resulting excavation area measuring approximately 12 feet to 18 feet wide, 33 feet long, and 8 feet to 10 feet deep. There was no visual evidence of PCS on the east and south sidewalls and the bottom of the exaction area, however, staining was visible on the sidewalls of the excavation on the west sidewall (4 feet to 8.5 feet bgs) and the north sidewall (3.5 feet to 8 feet bgs). Five confirmation soil samples were collected from the excavation area, one from each sidewall and one from the bottom of the excavation. Concentrations of lube oil, cadmium and chromium were detected in the samples from the north and west sidewalls, in addition to lead in the sample from the north sidewall. Concentrations of cadmium and chromium were also detected in the sample from the bottom of the excavation.

Nature and extent of contamination.

The contaminants of interest (COIs) in soil and groundwater include:

- Gasoline range TPH
- Diesel range TPH
- Lube oil range TPH

- VOCs
- PAHs
- Heavy metals (lead, cadmium and chromium)

Relatively low concentrations of gasoline were detected in both soil gas samples collected at the site. The COIs in soil gas include:

- Gasoline range TPH
- VOCs

The areas of remaining soil and groundwater contamination, also known as the locality of the facility (LOF), are depicted in Figure 4. Soil and groundwater contamination extends west from the area of the concrete vault excavation and includes a portion of the South 1st Street right-of-way.

4. RISK EVALUATION

Conceptual site model.

To evaluate human exposure to residual chemical contamination, an assessment of the type and extent of that exposure is required. This is based on current and reasonably likely future site use. DEQ publishes risk-based concentrations (RBCs) for contaminants commonly encountered for different types of exposure scenarios. These RBCs are conservative estimates of protective levels of contaminants in soil, groundwater and air. Table 1 shows potential exposure pathways and receptors for this site. Based on this, applicable RBCs are identified and used for risk screening. It should be noted that although the site is a non-residential facility, it is associated with an elementary school with children present. Thus, the most conservative RBCs (residential exposure scenario) were used for risk screening at this site.

Pathways by which soil contamination at the site could reach human receptors include:

- Soil ingestion, dermal contact, and inhalation for residential, occupational, construction, and excavation worker receptors
- Volatilization to outdoor air for residential and occupational receptors
- Vapor intrusion into buildings for residential and occupational receptors

The leaching to groundwater pathway is not complete because groundwater is not used at the site and will not be used in the future.

Pathways by which groundwater contamination at the site could reach human receptors include:

- Groundwater in excavations for construction and excavation workers
- Volatilization to outdoor air for residential and occupational receptors
- Vapor intrusion into buildings for residential and occupational receptors

The ingestion and inhalation from tap water pathway is not complete based on the current and future use of groundwater noted above.

Table 1. Identification of applicable RBCs, based on pertinent pathways and receptors

	Pathway	Receptor	Is Pathway Complete?	Is RBC Exceeded?	Comments
Soil	Ingestion, Dermal Contact and Inhalation	Residential	Yes	Yes	See notes 1 and 2.
		Urban Residential	No	N/A	
		Occupational	Yes	No	
		Construction Work	Yes	Yes	
		Excavation Worker	Yes	No	
	Volatilization to Outdoor Air	Residential	Yes	Yes	See note 3.
		Urban Residential	No	N/A	
		Occupational	Yes	No	
	Vapor Intrusion Into Buildings	Residential	Yes	Yes	See note 3.
		Urban Residential	No	N/A	
		Occupational	Yes	No	
	Leaching to Groundwater	Residential	No	N/A	See note 4.
		Urban Residential	No	N/A	
		Occupational	No	N/A	
Groundwater	Ingestion & Inhalation From Tap Water	Residential	No	N/A	See note 5.
		Urban Residential	No	N/A	
		Occupational	No	N/A	
	Volatilization to Outdoor Air	Residential	Yes	No	
		Urban Residential	No	N/A	
		Occupational	Yes	No	
	Vapor Intrusion Into Buildings	Residential	Yes	No	
		Urban Residential	No	N/A	
		Occupational	Yes	No	
	Groundwater in Excavation	Occupational	Yes	No	See note 6.
Soil Gas to Vapor Intrusion		Residential	Yes	No	
		Urban Residential	No	N/A	
		Occupational	Yes	No	

Notes:

1. Contamination was observed in shallow soils (1 foot to 3 feet bgs).
2. The more conservative residential receptor scenario was selected due to children present at the site.
3. Although soil RBCs were exceeded, results from soil gas sampling were below soil gas RBCs.

4. Groundwater is not used for drinking. This pathway is therefore not considered, in accordance with Section B.3.2.4 of DEQ's RBDM guidance.
5. City water is provided. Local groundwater is not currently used for drinking water and is not likely to be used for this purpose in the future.
6. The RBC for diesel for this pathway is listed as >S, where S is the solubility limit. The solubility limit of diesel is 6,800 µg/L. Concentrations of diesel in groundwater exceeded the solubility limit and indicates potential presence of free product, although no free product was encountered during site investigations.

Contaminant concentrations.

Table 2 and Table 3 list maximum concentrations of each detected COI in soil and groundwater, along with applicable RBCs for reference. The highest concentration of gasoline detected in soil gas was 2,300 µg/m³ and is below applicable RBCs for all receptors, with the strictest gasoline RBC being 79,000 µg/m³. No other COIs were detected in soil gas samples.

Table 2. Residual soil COI concentrations and applicable RBCs (mg/Kg)

Receptor	Residential			Occupational Worker		Construction Worker	Excavation Worker	Highest Value
Pathway	RBCss	RBCsi	RBCso	RBCsi	RBCso	RBCss	RBCss	
Gasoline	1,200	94	5,800	>Max	6,900	9,700	>Max	781
Diesel	1,100	>Max	>Max	>Max	>Max	4,600	>Max	16,100
Lube Oil	2,800	>Max	>Max	>Max	>Max	11,000	>Max	7,060
Cadmium	78	NV	NV	NV	NV	350	9,700	0.379
Chromium	120,000	NV	NV	NV	NV	530,000	>Max	71.2
Lead	400	NV	NV	NV	NV	800	800	<6.15
Acenaphthene	4,700	>Max	>Max	>Max	>Max	21,000	590,000	0.1
Chrysene	110	NV	NV	NV	NV	17,000	490,000	2.75
Fluoranthene	2,400	NV	NV	NV	NV	10,000	280,000	1.54
Fluorene	3,100	>Max	>Max	>Max	>Max	14,000	390,000	7.08
Isopropylbenzene	3,500	>Csat	>Csat	>Csat	>Csat	27,000	750,000	0.856
Naphthalene	5.3	6.4	6.4	83	83	580	16,000	18.5
Pyrene	1,800	>Max	>Max	>Max	>Max	7,500	210,000	0.311

Note: RBCso = Soil Volatilization to Outside Air. RBCsi = Soil Vapor Intrusion in Buildings. RBCss = Soil Ingestion, Inhalation and Dermal Contact. >Csat indicates greater than saturation. NV indicates constituent considered "non-volatile". >Max indicates the constituent RBC for this pathway is greater than 1,000,000 mg/Kg. NL indicates constituent not listed. **Bold** indicates an applicable risk-based concentration exceeded by highest soil value.

From *Cleanup and Risk-Based Assessment of Rogue Primary School*, Coleman Creek Consulting (2023)

Table 3. Residual groundwater COI concentrations and applicable RBCs (µg/L)

Receptor	Residential		Occupational Worker		Construction & Excavation Worker	Highest Value
Pathway	RBCwi	RBCwo	RBCwi	RBCwo	RBCgw	
Gasoline	22,000	>S	>S	>S	14,000	12,700
Diesel	>S	>S	>S	>S	>S	92,700
Lube Oil	>S	>S	>S	>S	>S	909
Ethylbenzene	620	9,900	8,200	43,000	4,500	2.81
Isopropylbenzene	>S	>S	>S	>S	51,000	4.83
4-Isopropyltoluene	NL	NL	NL	NL	NL	4.06
n-Butylbenzene	NL	NL	NL	NL	NL	7.15
n-Propylbenzene	NL	NL	NL	NL	NL	4.94
sec-Butylbenzene	NL	NL	NL	NL	NL	4.02
Naphthalene	840	3,600	11,000	16,000	500	181
1,2,4-Trimethylbenzene	50,000	>S	>S	>S	6,300	24.9
1,3,5-Trimethylbenzene	36,000	>S	>S	>S	7,500	14.3
Acetone	NL	NL	NL	NL	NL	8.89

Note: RBCwo = Water Volatilization to Outside Air. RBCwi = Water Vapor Intrusion into Buildings. RBCgw = Groundwater in Excavation. >S indicates greater and solubility limit (S = 162,000 µg/L for gasoline and S = 6,800 µg/L for diesel).

From *Cleanup and Risk-Based Assessment of Rogue Primary School*, Coleman Creek Consulting (2023)

Human health risk.

Concentrations of diesel, lube oil and naphthalene in soil exceeded RBCs for soil ingestion, inhalation and dermal contact for residential receptors, however, the RBCs for lube oil and naphthalene are not applicable due to the depth at which these exceedances were observed (deeper than 3 feet bgs). Diesel was detected at a concentration of 2,350 mg/Kg (RBC=1,100 mg/Kg) at 3 feet bgs in the location of the concrete vault excavation. This location and the observed residual diesel contamination are under the paved entrance to the site and it is unlikely residential receptors will come into contact with this contamination. Thus, there is currently no ingestion, inhalation and dermal contact risk to school children or workers at the site.

Concentrations of gasoline and naphthalene in soil exceeded RBCs for vapor intrusion into buildings and volatilization to outdoor air (naphthalene only) for residential receptors, however, soil gas was sampled directly and the highest concentration of gasoline detected in soil gas was below applicable RBCs. Moreover, naphthalene was not detected in soil gas samples. There is currently no indoor or outdoor vapor exposure risk to school children or workers at the site.

Concentrations of diesel in soil exceeded the RBC for ingestion, inhalation and dermal contact for construction worker receptors working in soil below 3.5 feet bgs. The extent of the soil contamination plume that poses health risk to construction workers surrounds the former concrete vault excavation (Figure 5); samples collected from the bottom of the excavation showed concentrations of diesel (3,020 mg/Kg and 1,750 mg/Kg) below the RBC. A portion of the plume overlaps with a limited area in the South 1st Street right-of-way. The highest concentration of diesel detected in soils in the right-of-way was 4,720 mg/Kg, which slightly exceeds the applicable RBC of 4,600 mg/Kg. Additionally, excavation workers are more likely to conduct work in the right-of-way than construction workers, and the applicable RBC for

excavation workers is greater than 1,000,000 mg/Kg (>Max). Based on this and subsurface conditions observed in the right-of-way, there is minimal risk to construction and excavation workers from offsite residual contamination.

While none of the RBCs for groundwater were exceeded, the highest concentration of diesel detected in groundwater was 92,700 µg/L. This exceeds the saturation limit for diesel, which is 6,800 µg/L and any concentration detected above this value indicates the potential presence of diesel free product in the subsurface. Direct contact with free product creates a health risk to construction and excavation workers due to potential ingestion, inhalation or dermal contact. Free product was not directly encountered during site investigation and cleanup activities, although a sheen was observed on groundwater that gathered in the excavation and a strong petroleum odor was noted in temporary well GW1. The soil with the most contamination was removed during the cleanup activities at the oil pan and vault excavations, which should help groundwater conditions to improve greatly over time. The area where potential free product at the site may be present, and construction/excavation workers could encounter it, is estimated to cover an area of approximately 5,400 square feet and is depicted in Figure 6. A portion of the plume overlaps with a limited area in the South 1st Street right-of-way.

Ecological risk.

The site will be fully developed as a school with no terrestrial habitat and is expected to remain as a school into the foreseeable future. The site has been graded to direct precipitation that falls on the site south toward the onsite stormwater detention pond. The pond will not provide permanent habitat to waterfowl or other organisms: Excess stormwater will flow into and through the pond, although the pond may fill up temporarily during significant precipitation.

The detention pond drains south to the municipal stormwater system, which discharges into Bear Creek approximately 0.75 miles northeast of the site. Bear Creek discharges into the Rogue River. The sides and bottom of the pond are not believed to contact residual soil contamination at the site. Additionally, the pond is located crossgradient from the areas of remaining soil and groundwater contamination and the depth of the pond is above the static shallow groundwater level at the site (approximately 10 feet bgs). Thus, it is unlikely that stormwater that enters the pond will come into contact with residual contamination at the site and impact offsite surface waters.

Concentrations of gasoline, diesel, isopropylbenzene and naphthalene in groundwater in temporary well GW1 exceeded acute and/or chronic exposure RBCs for freshwater aquatic life. Concentrations of gasoline and diesel were not detected in a boring approximately 100 feet downgradient from the observed exceedances. Although the sample from the downgradient boring (GW3) was not analyzed for isopropylbenzene or naphthalene, the lack of gasoline and diesel detections suggests that these constituents are not present at elevated concentrations. Based on the observations in this boring, aquatic life in downgradient surface water bodies are unlikely to be impacted by groundwater contamination at the site.

5. RECOMMENDATION

A Contaminated Media Management Plan (CMMP) for the site is required due to residual concentrations of diesel in soil that exceed the construction worker RBC and concentrations of diesel in groundwater that indicate the potential presence of diesel free product. The CMMP will include site-specific information and guidance to the site contractor(s) regarding the management of contaminated soil and groundwater and free product that may be encountered during construction activities and site improvement. The CMMP will also include a Health and Safety Plan to identify the pertinent health and safety requirements for construction workers at the site and recommend measures to be taken to reduce exposures to workers, and ensure that they are aware of the presence of the contamination.

An Easement and Equitable Servitudes (EES) will need to be prepared and recorded on the school property stipulating that the CMMP and Health and Safety Plan must be followed when doing excavation work within the area of contamination. This plan should also be provided to utility owners along South 1st Street and the City of Central Point. A 30-day public comment period will be conducted to give the above parties and neighboring properties an opportunity to comment on this recommendation.

Following the submission of a DEQ reviewed and approved CMMP, the recording of the EES, and based on sample results for soil, groundwater and soil gas, acceptable risk levels are not exceeded, and a Conditional No Further Action determination is recommended for this site. The Conditional No Further Action determination should be recorded in DEQ's ECSI database (ECSI #6520).

6. ADMINISTRATIVE RECORD

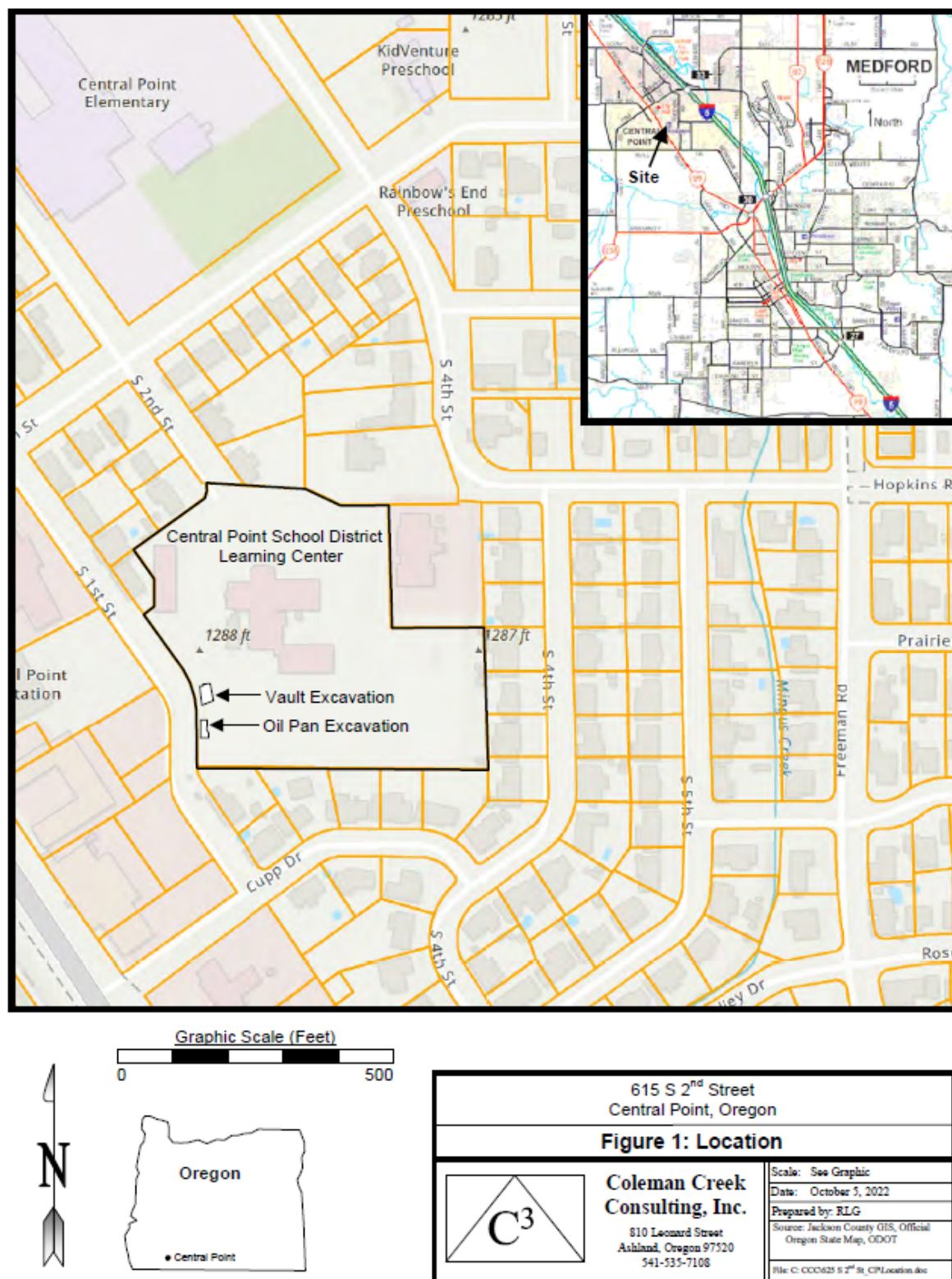
Cleanup and Risk-Based Assessment of Rogue Primary School, Coleman Creek Consulting, Inc., January 4, 2023.

Concrete Structure, PCS Removal Excavation Soil Sampling – Rogue Primary School, Coleman Creek Consulting, Inc., May 10, 2022.

7. ATTACHMENTS

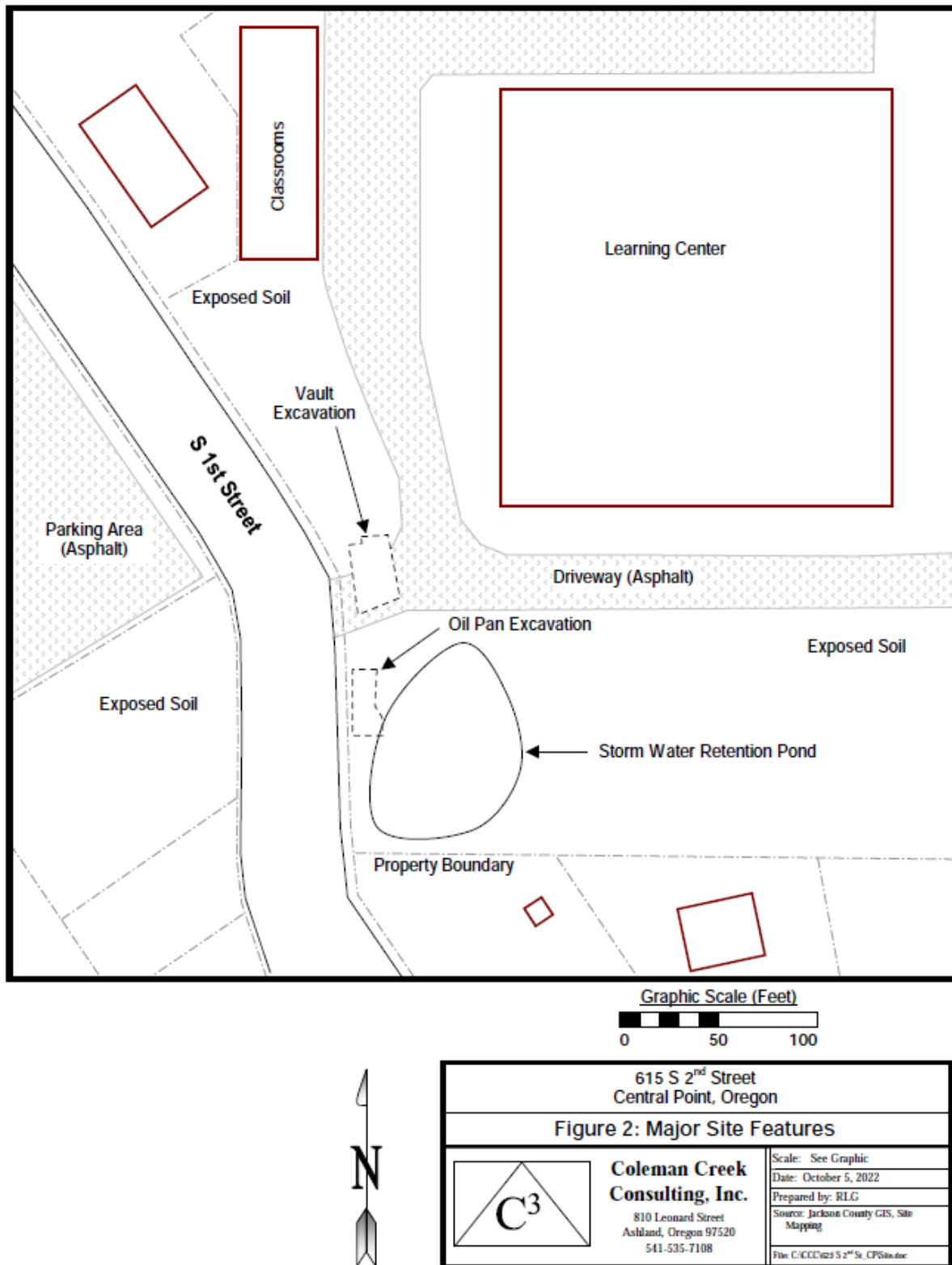
1. Vicinity map
2. Site map
3. Cross sections through impacted soils, with utilities and detention pond
4. Locality of the facility
5. Estimated plume of residual diesel contamination
6. Estimated plume of potential diesel free product

Figure 1. Vicinity map



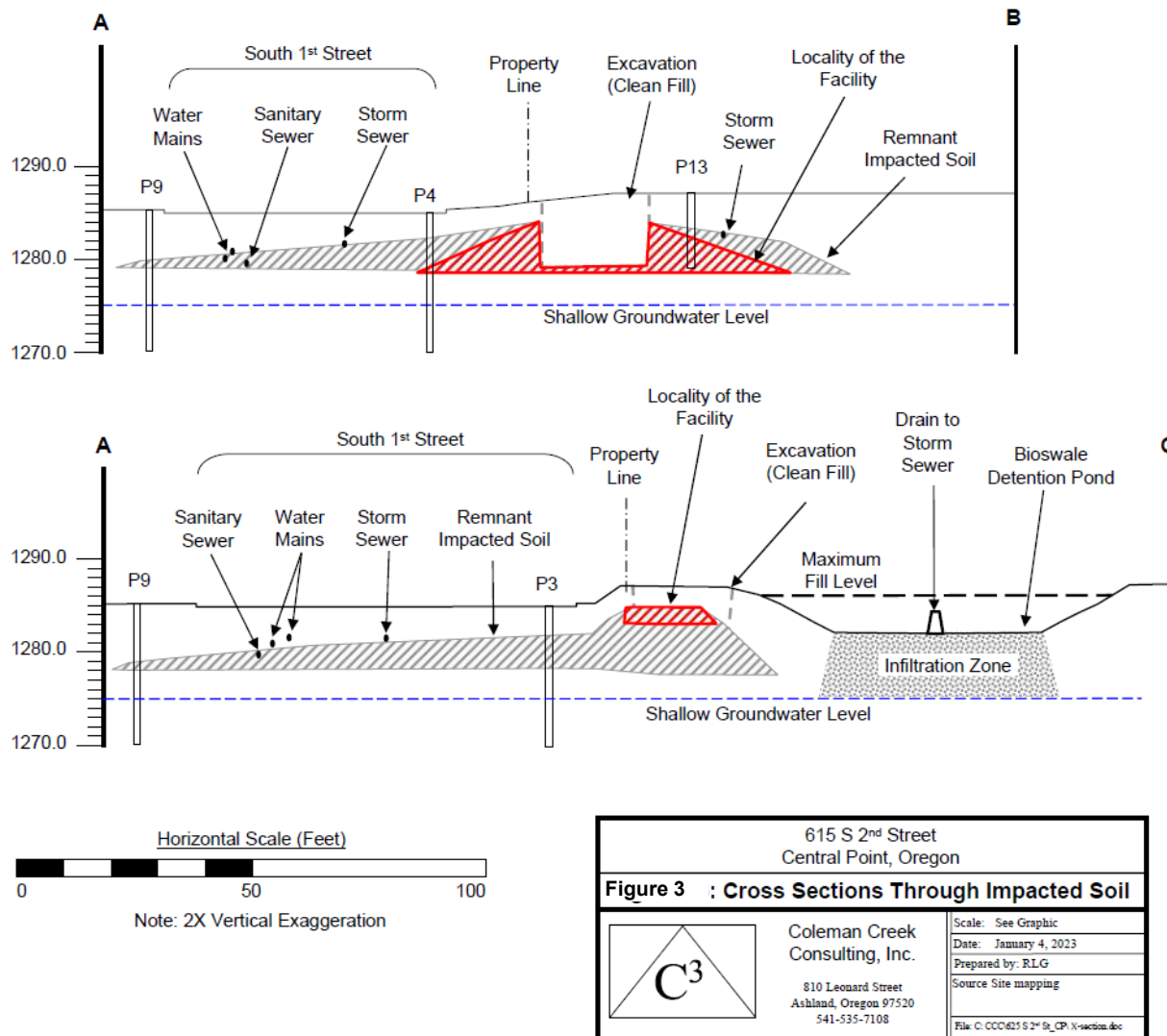
From *Cleanup and Risk-Based Assessment of Rogue Primary School*, Coleman Creek Consulting (2023)

Figure 2. Site map



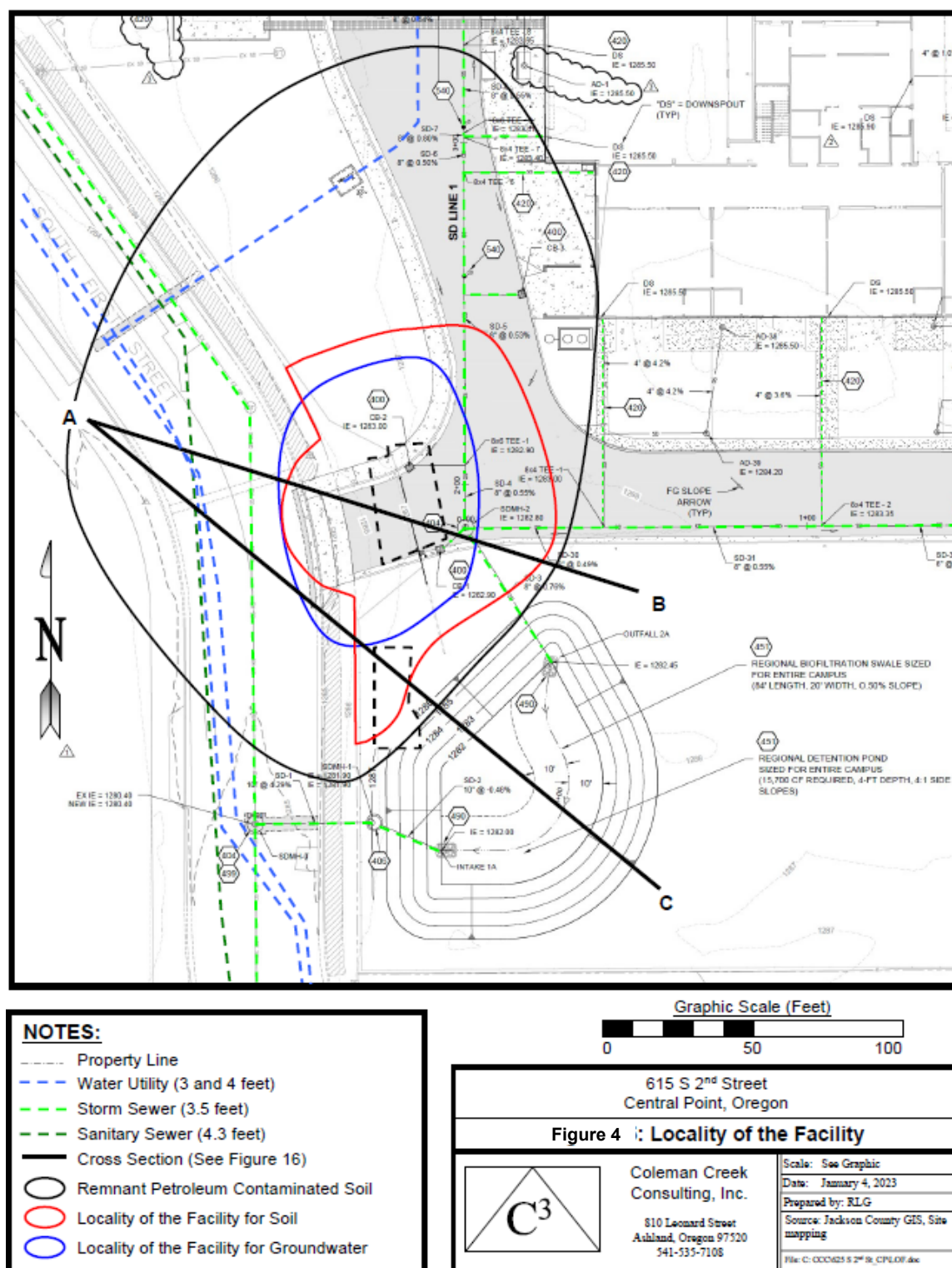
From *Cleanup and Risk-Based Assessment of Rogue Primary School*, Coleman Creek Consulting (2023)

Figure 3. Cross sections through impacted soils, with utilities and detention pond



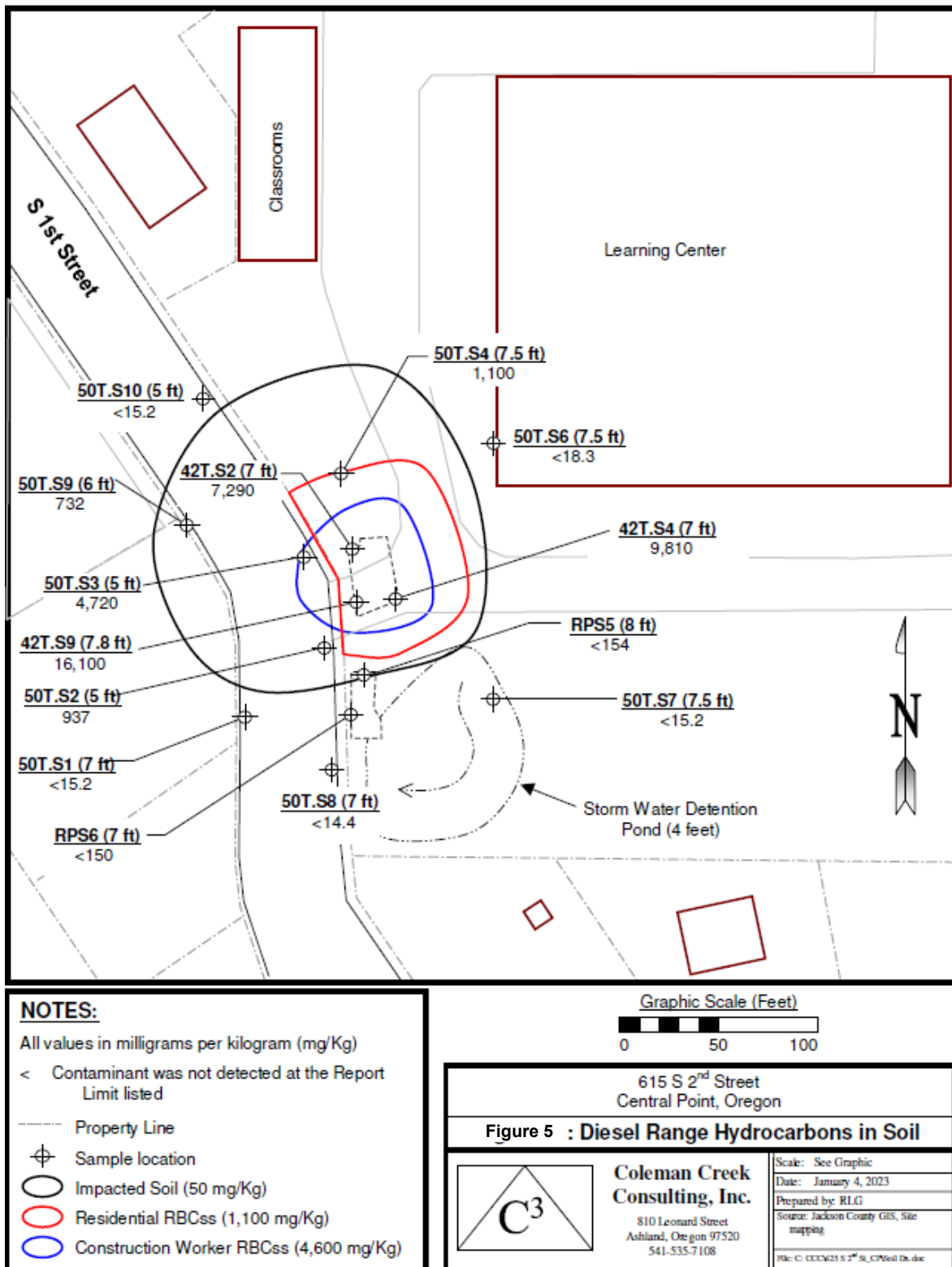
From *Cleanup and Risk-Based Assessment of Rogue Primary School*, Coleman Creek Consulting (2023)

Figure 4. Locality of the facility



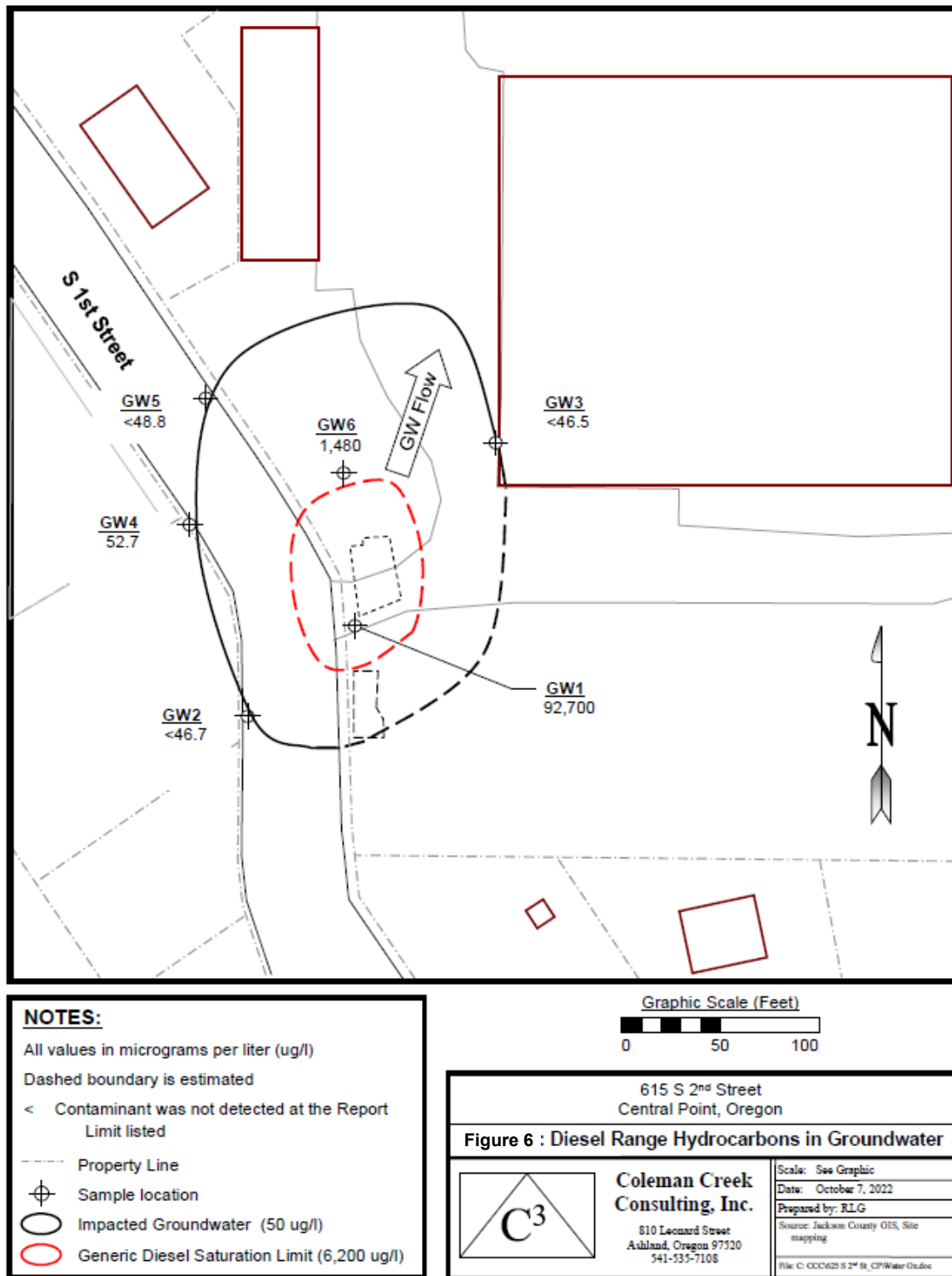
From *Cleanup and Risk-Based Assessment of Rogue Primary School*, Coleman Creek Consulting (2023)

Figure 5. Estimated plume of residual diesel contamination



From *Cleanup and Risk-Based Assessment of Rogue Primary School*, Coleman Creek Consulting (2023)

Figure 6. Estimated plume of potential diesel free product



From *Cleanup and Risk-Based Assessment of Rogue Primary School*, Coleman Creek Consulting (2023)