



THE STATE  
*of* **ALASKA**  
GOVERNOR MIKE DUNLEAVY

Department of Environmental  
Conservation

SPILL PREVENTION & RESPONSE  
Contaminated Sites Program

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DEC File No: 2424.38.001

May 17, 2024

Jenna Van Horn  
Compliance Cleanup Manager  
Alaska Army National Guard  
PO Box 5169  
JBER, AK 99505

Subject: **DECISION DOCUMENT: Cleanup Complete Determination**  
AKARNG Kwethluk FSA

Dear Ms. Van Horn,

The Alaska Department of Environmental Conservation, Contaminated Sites Program (DEC), Contaminated Sites Program (CSP) has completed a review of the environmental records associated with the AKARNG Kwethluk FSA located in Kwethluk, AK. Based on the information provided to date, it has been determined that the contaminant concentrations remaining on site do not pose an unacceptable risk to human health or the environment and no further remedial action will be required unless information becomes available that indicates residual contaminants may pose an unacceptable risk.

This Cleanup Complete determination is based on the administrative record for the AKARNG Kwethluk FSA maintained by DEC. This decision letter summarizes the site history, cleanup actions and levels, and site closure conditions that apply.

**Site Name and Location:**

AKARNG Kwethluk FSA  
Latitude: 60.810864  
Longitude: 161.435168  
Kwethluk, AK 99621

**Name and Mailing Address of Contact Party:**

Jenna Van Horn  
Alaska Army National Guard  
PO Box 5169  
JBER, AK 99505

**DEC Site Identifiers:**

File No.: 2424.38.001  
Hazard ID: 2814

**Regulatory Authority for Determination:**

18 Alaska Administrative Code (AAC) 75

### Site Description and Background

The Alaska Army National Guard (AKARNG) Kwethluk Federal Scout Armory (FSA) is located on Lot 1, Block 16 of the United States Survey 4221 for the Kwethluk Townsite (**Figure 1**). The FSA consists of the Old Armory, constructed in the early 1960s and the New Armory, constructed in 1986. Both buildings have raised wooden foundations. The nearest surface water body, the Kwethluk River, is approximately 300 feet north of the site. The property is in a low-lying area with surface water drainage generally flowing onto the property. The location of the Kwethluk FSA is shown in Figure 1.

Multiple releases have been reported at the FSA, including a 1987 release of approximately 150 gallons of heating oil attributed to a broken glass filter bulb on a 3,000-gallon single-walled aboveground storage tank (AST) on the east side of the Old Armory; a 1992 release of an unknown quantity of a petroleum product due to an overturned 55-gallon drum on the east side of the New Armory; and a 1995 release of 10-15 gallons of heating oil due to faulty plumbing between a second 3,000-gallon, double walled AST and the New Armory.

### Contaminants of Concern

During site investigation and cleanup activities at this site, samples were collected from soil and groundwater and analyzed for gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). Based on these analyses, the following contaminants were detected above the applicable cleanup levels

- DRO
- RRO
- Benzene
- Ethylbenzene
- Xylenes

### Cleanup Levels

As allowed under 18 AAC 75.340 (d), DEC approved Method 3 site-specific alternative cleanup levels (ACLs) in 2013. Site-specific ACLs were calculated for aromatic and aliphatic GRO, DRO, and RRO. Soil cleanup limits for all other analytes are the most stringent Method 2 migration to groundwater (MTG) cleanup levels for Under 40-Inch Zones, found in 18 AAC 75.341(c), Table B1. Groundwater cleanup levels applicable to this site are found in 18 AAC 75.345, Table C.

**Table 1 – Approved Cleanup Levels**

Contaminant	18 AAC 75 Soil Cleanup Level (mg/kg)	18 AAC 75 Table C Groundwater Cleanup Level (µg/L)
GRO	300	2,200
DRO	10,250*	1,500
RRO	11,000	1,100
Benzene	0.022	4.6
Ethylbenzene	0.13	15
Xylenes	1.5	190

Notes:

1. mg/kg = milligrams per kilogram
2. µg/L = micrograms per liter
3. \* = Approved Alternative Cleanup Level

### Characterization and Cleanup Activities

Soil: A 1995 site investigation documented DRO in soil at a maximum concentration of 11,000 milligrams per kilogram (mg/kg). Three main areas of concern (AOC) were identified (**Figure 2**):

- **AOC A** - contamination associated with an inactive fuel transfer pipeline that led from the Old Armory aboveground storage tank (AST) north off property
- **AOC B** - contamination associated with faulty plumbing from the North Armory AST
- **AOC C** - contamination directly under the Old Armory AST

Contamination was further delineated in a 1998 remedial investigation (RI). Between the two investigations, 22 soil borings were advanced across the site, to a maximum depth of 5 feet below ground surface (bgs) due to frozen soil. Soil samples were collected and analyzed for total petroleum hydrocarbons (TPH), DRO, and benzene, toluene, ethylbenzene, and xylenes (BTEX), with a subset additionally analyzed for GRO, RRO, and PAHs. Soil samples exceeded the most stringent cleanup level for DRO in 1998 with a maximum concentration of 19,000 mg/kg in boring SB05 at AOC A.

Based on the results of the previous delineation efforts, a bulk removal of contaminated soil was conducted in 2000. A total of 25 cubic yards (cy) of petroleum-contaminated soil was removed from the three AOCs to a maximum depth of 5 feet bgs. Confirmation soil samples were collected from the base and sidewalls of each excavation and the results indicated that petroleum contamination above the most stringent cleanup levels, had not been fully removed. Sample KWE007, from the excavation sidewall in AOC C contained DRO up to 25,000 mg/kg, and GRO at 647 mg/kg, with additional exceedances for several VOCs, indicating a need for further cleanup at the site.

Between 2003 and 2011, two site characterization events were conducted to delineate contamination and to develop alternative cleanup levels. A total of 17 borings and 29 soil samples were collected from all AOCs as well as in areas thought to represent background conditions, outside areas of known contamination. Soil samples, taken from a range of depths between 0 feet bgs and 9 feet bgs, were analyzed for DRO and RRO, and a subset were additionally analyzed for percent solids, total organic carbon (TOC), GRO, and BTEX. Analytical results from both investigations demonstrated concentrations of DRO that exceeded the cleanup level with a 2003 soil sample (KWT-ACL-12) at 11,500 mg/kg, and a 2011 soil sample (11KWESB001) at 14,000 mg/kg, both located in AOC C (**Figure 2**).

A final remedial action was conducted in 2015 in which 11.85 tons of petroleum-impacted soil was removed to a depth of 6 feet bgs from AOC C, in the location of soil sample 11KWESB001. Five confirmation samples were collected and analyzed for DRO and GRO, all of which were below the approved cleanup levels (**Figure 3**).

Groundwater: A limited groundwater investigation was conducted in 1998, using two drive point wells installed to a depth of 4 feet bgs and 9 feet bgs. Groundwater samples were noted to be very turbid, and wells had slow recharge rates. Groundwater was analyzed for GRO, DRO, BTEX, nitrate, phosphate, and sulfate; all analytes detected in groundwater were below DEC cleanup levels.

Groundwater sampling was also conducted during subsequent field seasons with multiple soil borings being completed as temporary monitoring wells. In 2003, three temporary monitoring wells exceeded DEC groundwater cleanup levels for both DRO and RRO, with concentrations of 5,270 µg/L and

7,720 µg/L, respectively. In 2011, three new temporary monitoring wells were installed, with all detected analytes below DEC groundwater cleanup levels applicable at that time. In 2015, three permanent monitoring wells were installed: MW1 in the backfilled excavation; MW2 to the north of the property; and MW3 to the east of AOC A (**Figure 4**). The wells were sampled and analyzed for DRO and RRO. MW1 and MW3 had concentrations below Table C, while MW2 slightly exceeded the DRO cleanup level with a concentration of 1.7 mg/L.

Following installation of the permanent wells, and as a condition of the 2013 Record of Decision (ROD), five years of long-term groundwater monitoring was undertaken. Between 2015-2022, all analytes detected in groundwater were below cleanup levels, with the exception of the 2018 monitoring event in which MW2 had a DRO concentration of 3.0 mg/L. This anomaly may be attributed to a large precipitation event that mobilized contamination in the soil. During the four subsequent monitoring well events, all analytes were below Table C cleanup levels.

In 2022, additional sampling was conducted to analyze for a full suite of volatile organic compounds (VOCs). Results indicated that only one VOC analyte was detected in the groundwater at concentrations below DEC cleanup levels. No exceedances of groundwater cleanup levels have been identified since 2018. Groundwater monitoring wells were decommissioned in August of 2023.

### Remaining Contamination

The maximum concentrations of contaminants remaining at the site are shown in Tables 2a and 2b. These concentrations are all below their respective approved cleanup levels. Sample locations referred to in Tables 2a and 2b are shown in the attached site **Figure 2**.

**Table 2a – Maximum Contaminant Concentrations Remaining in Soil**

Contaminant	Soil (mg/kg)	Sample Location	Date Sampled
DRO	10,000	11KWESB003	7/18/2011
RRO	90.3	KWE-ACL-02	9/23/2003

**Table 2b – Maximum Contaminant Concentrations Remaining in Groundwater**

Contaminant	Groundwater (µg/L)	Sample Location	Date Sampled
DRO	1,400	MW-2	10/7/2022
RRO	351	MW-2	10/7/2022

### Cumulative Risk Evaluation

Pursuant to 18 AAC 75.325(g), when detectable contamination remains on-site following a cleanup, a cumulative risk determination must be made that the risk from hazardous substances does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways and does not exceed a cumulative noncarcinogenic risk standard at a hazard index (HI) of 1 across all exposure pathways.

Based on a review of the environmental record, DEC has determined that residual contaminant concentrations meet the human health cumulative risk criteria for residential land use.

### Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using DEC's Exposure Tracking Model (ETM). Exposure pathways are the conduits by which contamination may reach human or ecological receptors. ETM results show all pathways to be one of the following: De Minimis Exposure, Exposure Controlled, or Pathway Incomplete. A summary of this pathway evaluation is included in Table 2.

**Table 2 – Exposure Pathway Evaluation**

<b>Pathway</b>	<b>Result</b>	<b>Explanation</b>
Surface Soil Contact	De Minimis Exposure	Contamination remains in the surface soil but is below approved Alternative Cleanup Levels.
Subsurface Soil Contact	De Minimis Exposure	Contamination remains in the subsurface soil but is below approved Alternative Cleanup Levels.
Inhalation – Outdoor Air	De Minimis Exposure	Contamination remains in the subsurface soil but is below approved Alternative Cleanup Levels and Under-40 Inhalation Levels.
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	Both armory buildings are constructed on elevated foundations. The remaining contamination in the subsurface is below approved Alternative Cleanup Levels and Under-40 Inhalation Levels.
Groundwater Ingestion	De Minimis Exposure	Contamination remaining in groundwater is below Table C Groundwater Cleanup Levels. Additionally, groundwater is not used as a drinking water source at the site.
Surface Water Ingestion	Pathway Incomplete	Surface water is not used as a drinking water source in the vicinity of the site and the nearest source of surface water, the Kwethluk River, is over 300 ft away. Groundwater contamination is not expected to migrate to surface water.
Wild and Farmed Foods Ingestion	Pathway Incomplete	Contaminants of concern do not have the potential to bioaccumulate in plants or animals. No wild or farmed foods are found on site.
Exposure to Ecological Receptors	Pathway Incomplete	Contamination remains in the subsurface and in the groundwater but is below all appropriate cleanup levels. The site is located in a developed area unlikely to attract ecological receptors.

Notes:

1. “De Minimis Exposure” means that, in DEC’s judgment, the receptors are unlikely to be adversely affected by the minimal volume or concentration of remaining contamination.
2. “Pathway Incomplete” means that, in DEC’s judgment, the contamination has no potential to contact receptors.

### DEC Decision

Soil and groundwater contamination at the site has been cleaned up to concentrations below the approved cleanup levels suitable for residential land use. This site will receive a “Cleanup Complete” designation on the Contaminated Sites Database.

The DEC approval is required for the movement and disposal of soil and/or groundwater subject to the Site Cleanup Rules, in accordance with 18 AAC 75.325(i). Please contact DEC for information about applicable regulations and requirements. A “site”, as defined by 18 AAC 75.990, means an area that is

contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership.

Movement or use of contaminated material in an ecologically sensitive area or in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Furthermore, groundwater throughout Alaska is protected for use as a water supply for drinking, culinary and food processing, agriculture including irrigation and stock watering, aquaculture, and industrial use. Contaminated site cleanup complete determinations are based on groundwater being considered a potential drinking water source. If, in the future, groundwater from this site is to be used for other purposes, additional testing and treatment may be required to ensure the water is suitable for its intended use.

This determination is in accordance with 18 AAC 75.380 and does not preclude DEC from requiring additional assessment and/or cleanup action if information indicates that contaminants at this site may pose an unacceptable risk to human health, safety, or welfare or to the environment.

### **Informal Reviews and Adjudicatory Hearings**

A person authorized under a provision of 18 AAC 15 may request an informal review of a contested decision by the Division Director in accordance with 18 AAC 15.185 and/or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. See DEC's "Appeal a DEC Decision" web page <https://dec.alaska.gov/commish/review-guidance/> for access to the required forms and guidance on the appeal process. Please provide a courtesy copy of the adjudicatory hearing request in an electronic format to the parties required to be served under 18 AAC 15.200. Requests must be submitted no later than the deadline specified in 18 AAC 15.

If you have questions about this closure decision, please feel free to contact me at (907) 262-8203 or email at [jenny.gates@alaska.gov](mailto:jenny.gates@alaska.gov).

Sincerely,

*Jenny Gates*

Jenny Gates  
Project Manager

cc, via email: DEC, Division of Spill Prevention and Response, Cost Recovery Unit,  
[dec.spar.cr@alaska.gov](mailto:dec.spar.cr@alaska.gov)

Jamie McKellar, ADEC, [jamie.mckellar@alaska.gov](mailto:jamie.mckellar@alaska.gov)

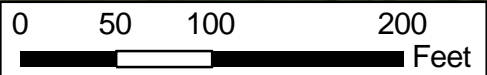
Donald Fluornoy, DMVA, [Donald.Fluornoy@alaska.gov](mailto:Donald.Fluornoy@alaska.gov)

Alyssa Murphy, DMVA, [Alyssa.murphy@alaska.gov](mailto:Alyssa.murphy@alaska.gov)

Attachments: Figure 1 – Site Location  
Figure 2 – Soil Sampling Locations  
Figure 3 – Soil Confirmation Sample Results  
Figure 4 – Monitoring Well Locations



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**Note:**

**E**

**Scale**  
1:1,200  
1 inch = 100 feet

**PROJECT LOCATION AND VICINITY  
KWETHLUK FEDERAL SCOUT READINESS CENTER  
ALASKA ARMY NATIONAL GUARD**

Kwethluk, Alaska



PROJECT MANAGER

Brad Ramsay

DATE

2 Aug 2022

FIGURE NUMBER

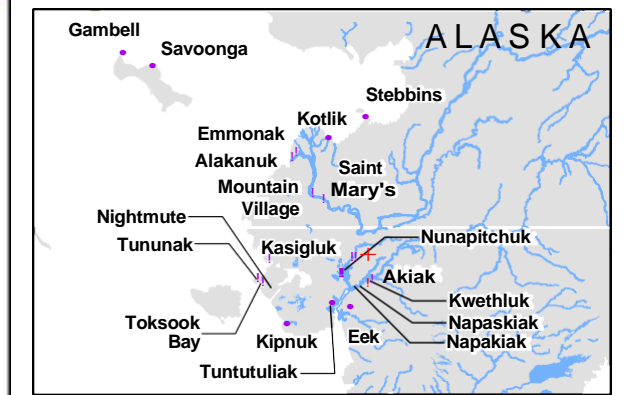
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# Remedial Action Report

## Kwethluk Federal Scout Readiness Center

Kwethluk, AK

VICINITY MAP



**LEGEND**

- Federal Scout Readiness Center (FSRC)
- Old FSRC
- Storage Van
- Former Portable Tent
- AST
- Former AST
- Day Tank
- Hazardous Materials Storage Locker
- Approximate Area Excavated in 2000
- Estimated Area To Be Excavated Based On 2012 Data Gap Investigation Report
- Tank Piping
- US Survey Line
- Subdivision Lot
- Fuel Transfer Pipeline (abandoned)
- Electric & Telephone Line

**Soil DRO Results**

- DRO ≤ 250 mg/kg
- DRO > 250 mg/kg

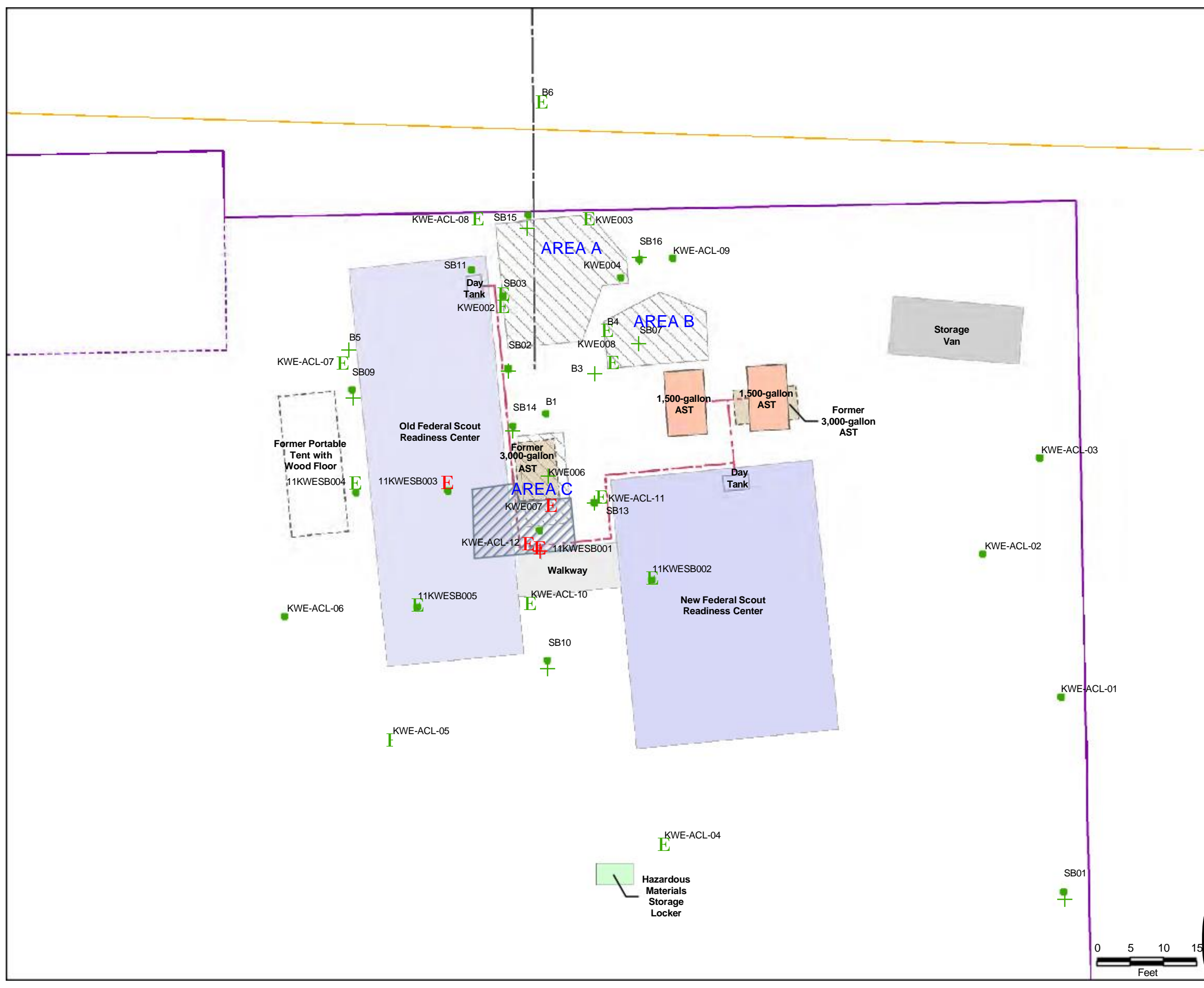
**Guide to Symbol Shapes**

- Small Circle = soil samples from 0 to ≤ 2 feet bgs
- Medium Hexagon = soil samples from > 2 to ≤ 4 feet bgs
- Large Circle = soil samples > 4 feet bgs

**Notes:**

- Location of historical samples is approximate based on historical figures and on orthophotography courtesy of Alaska Department of Commerce, Division of Community & Regional Affairs (DCRA), 1-foot pixels.
- Location of excavation is approximate based on historical figures.
- Definitions:  
 AST = aboveground storage tank  
 bgs = below ground surface  
 DRO = diesel-range organics  
 mg/kg = milligrams per kilogram

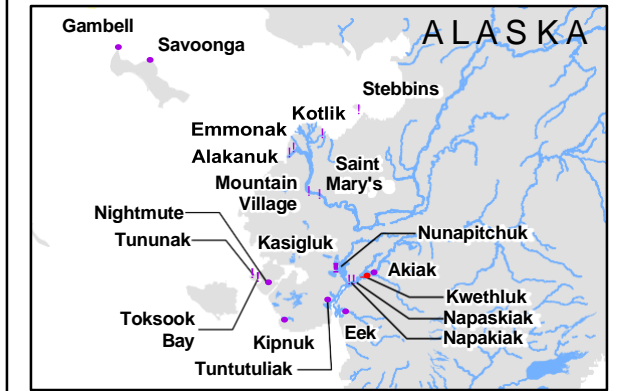
**Figure 2**  
**Previous Soil Sample Locations**  
 Reference: Figure based on Kwethluk FSRC Data Gap Investigation Report (CH2M HILL, 2012), Figure 8-1.





### Remedial Action Report Kwethluk Federal Scout Readiness Center Kwethluk, AK

VICINITY MAP



#### LEGEND

- Old Federal Scout Readiness Center (FSRC)
- Walkway
- 2015 Excavation Area

- #### Soil DRO Results
- Analytical and PID field screening soil sample locations with results
  - PID field screening soil sample location with result

- #### Notes:
1. Locations are approximate.
  2. Excavation sample locations based on 2015 Eagle Eye field notes.
  3. Definitions:  
 DRO = diesel range organics  
 ft bgs = feet below ground surface  
 GRO = gasoline range organics  
 mg/kg = milligrams per kilogram  
 PID = photoionization detector  
 ppm = parts per million

**Old  
Federal  
Scout  
Readiness  
Center**

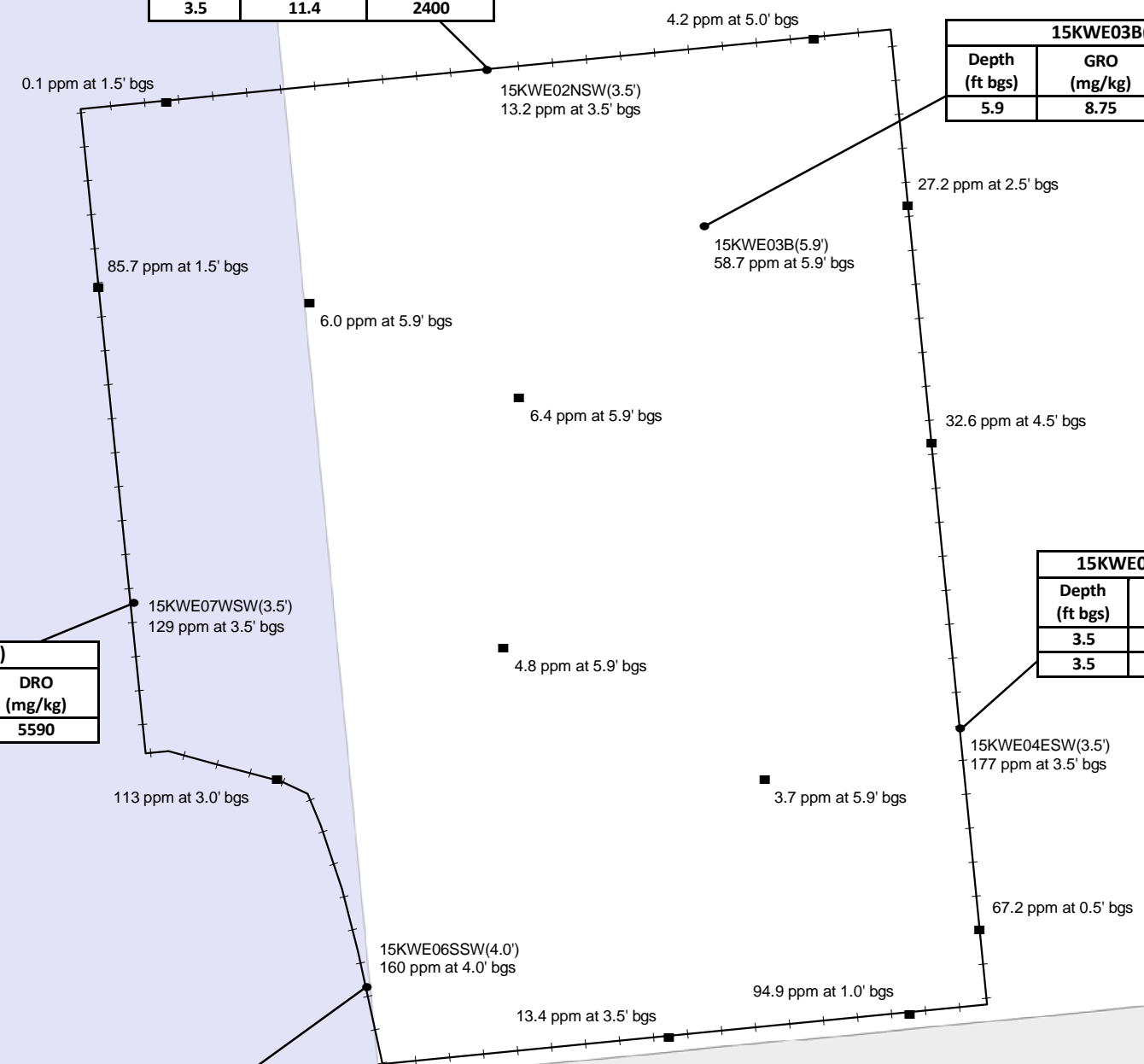
15KWE02NSW(3.5)		
Depth (ft bgs)	GRO (mg/kg)	DRO (mg/kg)
3.5	11.4	2400

15KWE03B(5.9)		
Depth (ft bgs)	GRO (mg/kg)	DRO (mg/kg)
5.9	8.75	1090

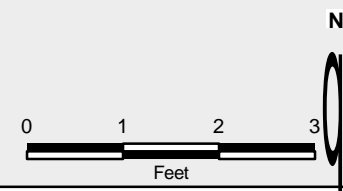
15KWE04ESW(3.5) & Duplicate		
Depth (ft bgs)	GRO (mg/kg)	DRO (mg/kg)
3.5	63.7	4040
3.5	88.3	4150

15KWE07WSW(3.5)		
Depth (ft bgs)	GRO (mg/kg)	DRO (mg/kg)
3.5	24.4	5590

15KWE06SSW(4.0)		
Depth (ft bgs)	GRO (mg/kg)	DRO (mg/kg)
4	70.6	4290

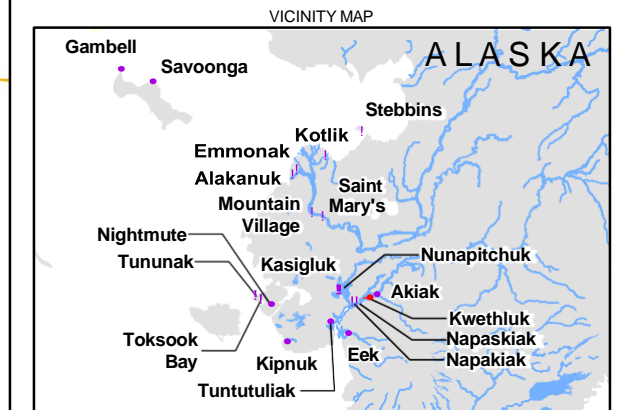


**Walkway**



**Figure 3**  
 2015 Excavation Area with Field Screening and Analytical Soil Sample Locations and Results  
 Reference: Figure based on Kwethluk FSRC Data Gap Investigation Report (CH2M HILL, 2012), Figure 8-1.

**Remedial Action Report**  
**Kwethluk Federal Scout Readiness Center**  
Kwethluk, AK



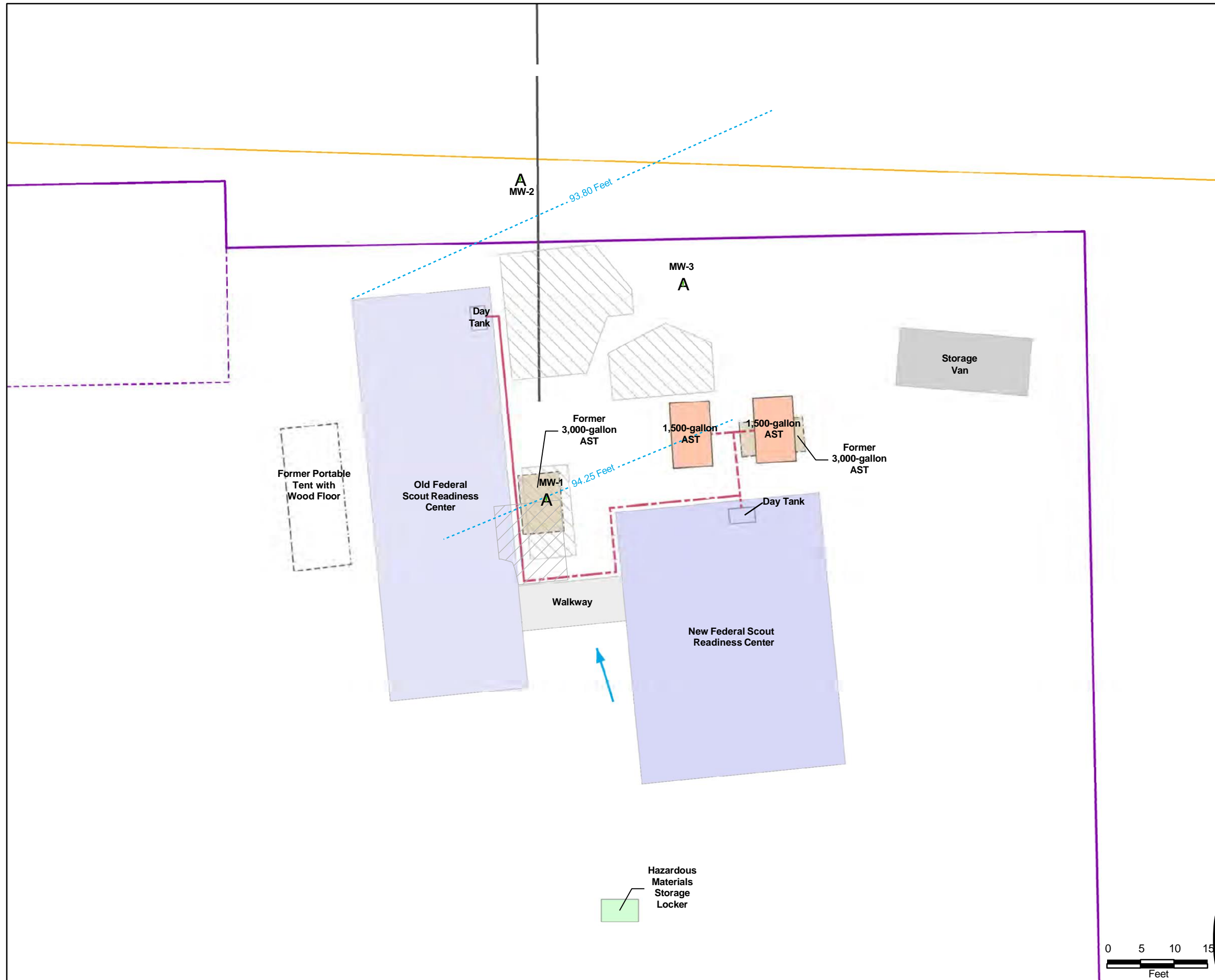
**LEGEND**

- Federal Scout Readiness Center (FSRC)
- Old FSRC
- Storage Van
- Former Portable Tent
- AST
- Former AST
- Day Tank
- Hazardous Materials Storage Locker
- Approximate Area Excavated in 2000
- Area Excavated in 2015
- Tank Piping
- 2015 Groundwater Elevation Contour
- Inferred Groundwater Flow Direction
- US Survey Line
- Subdivision Lot
- Fuel Transfer Pipeline (abandoned)
- Electric & Telephone Line
- A** New Groundwater Monitoring Well Location

**Groundwater DRO Results**

- DRO ≤ 1.5 mg/L
- DRO > 1.5 mg/L

Notes:  
1. Definitions:  
AST = aboveground storage tank  
DRO = diesel-range organics  
mg/L = milligrams per liter  
ND = non-detect (detection limit)  
RRO = residual range organics



**Figure 4**  
**New Monitoring Well Locations and 2015 Sample Results**  
Reference: Figure based on Kwethluk FSRC Data Gap Investigation Report (CH2M HILL, 2012), Figure 6-2.