THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

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File No: 2435.38.004

January 27, 2014

Jacob Jensen, LKSD Superintendent
Lower Kuskokwim School District
P.O. Box 305
Bethel, AK 99559

Re: Decision Document: Nightmute School Cleanup Complete Determination

Dear Mr. Jensen,

The Alaska Department of Environmental Conservation (ADEC) has reviewed the environmental records for the referenced site (see Figure 1 for the site location). This decision letter memorializes the site history, cleanup actions, and standard conditions for long-term site management. No further remedial action is required.

Site Name and Location:
Nightmute School
South of Kaugia Street
Nightmute, Alaska 99690

Name and Mailing Address of Contact Party:
Jacob Jensen, LKDS Superintendent
Lower Kuskokwim School District
P.O. Box 305
Bethel, AK 99559

DEC Site Identifiers:
File No: 2435.38.004
Hazard ID: 25381

Regulatory Authority for Determination:
18 AAC 75

Site Description and Background

A Village of Nightmute Site Assessment Project Report, dated April 9, 2002 was received by the Alaska Department of Environmental Conservation (ADEC) in 2009 and consisted of six environmental site assessments (ESAs) performed at six bulk fuel storage facilities in Nightmute, Alaska.

The Nightmute School site consisted of a school tank farm located to the northeast of the school and three 500 gallon day tanks located generally east of the school. The school tank farm consisted of four 7,000 gallon horizontal above ground storage tanks (ASTs) that were contained on an elevated wooden stand approximately five feet high. The wooden stand was equipped with wooden walls and was lined with a black, coated fabric. Water was observed dripping from the liner. All of the 500 gallon day tanks were elevated on metal stands approximately five feet off the ground. Several spills have been documented at this site, including a 225 gallon diesel spill in 1997 located at the schools generator building day tank. Stressed vegetation was observed in this area during the OASIS 2002 site assessment.

Test pits were advanced during this assessment near the school tank farm (not currently in use) and also the generator building day tank area to a maximum depth of 18-inches below ground surface (bgs). Soils in each test pit were field screened for volatile constituents utilizing a photoionization detector (PID). Soils with the highest PID readings were selected for laboratory analysis (see Figure 2 for sampling areas).

All of the soil samples were analyzed for diesel range organics (DRO) and residual range organics (RRO). One of the soil samples was also analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), and polynuclear aromatic hydrocarbons (PAHs).

One soil sample, collected from one foot bgs near the generator building day tank exhibited a concentrations of DRO at 412 milligrams per kilogram (mg/kg), which exceeds the most stringent ADEC cleanup criterion of 250 mg/kg. All other analytes were not detected above the most stringent cleanup levels.

Contaminants of Concern

Diesel Range Organics (DRO) was detected above the approved cleanup levels during the course of the site investigations summarized in the Characterization and Cleanup section of this decision letter.

Cleanup Levels

A concentration of DRO was detected in soil above the migration to groundwater cleanup level established in 18 AAC 75.341 (d), Table B2.

Table 1 – Approved Cleanup Levels (Soil)

Contaminant	Direct Contact/ Ingestion (mg/kg)	Inhalation (mg/kg)	Migration to Groundwater (mg/kg)	Concentration of Analyte Remaining Onsite (mg/kg)
DRO	10,250	12,500	250	1,320

mg/kg = milligrams per kilogram

Characterization and Cleanup Activities

Restoration Science & Engineering, LLC (RSE) performed a Limited Environmental Site Characterization on October 16 through 18, 2013 to support the Lower Kuskokwim School District (LKSD) during the design and expansion of the school at this site. According to the site characterization report, stressed vegetation was noted in some areas surrounding the school; however, was attributed to foot and vehicle traffic. The school receives potable water from a Class A groundwater well located approximately 400 feet north of the school. Additionally, the city well is located approximately 150 feet east of the school well.

A total of 83 shallow test pits, ranging in depths from 8 to 36 inches were advanced on the east and southeastern portions of this site. The test pits were advanced in several areas of concern; near the generator building day tank (area of the 1997 spill), the shop day tank, the school boiler day tank, the former tank farm (no longer in use), a new 4,000 gallon diesel AST that replaced the former tank farm, and an area generally south of the school near ponded water. In general, the boring logs indicated that peat was encountered at 8 inches bgs, and gray sand and silt was encountered at 18 and 36 inches bgs. A frozen layer was noted between two and three feet bgs in each test pit.

Soils in each test pit were field screened for volatile organic constituents (VOCs) utilizing a PID and the soils with the highest PID readings were selected for laboratory analysis (see Figure 3 for sampling areas). A water sample was collected from the schools water supply well from the boiler room and prior to any treatment. The water was not purged prior to collecting the water sample for laboratory analysis.

A total of 18 soil samples, including a duplicate soil sample, were submitted for laboratory analysis. The soil samples were analyzed for gasoline range organics (GRO), DRO, RRO, and BTEX. Additionally, six of the soil samples were also analyzed for semi-volatile organic compounds (SVOCs). The water sample was analyzed for DRO, RRO, and VOCs. The water sample and all of the soil samples (except for Sample NM01-A-8) were either not detected above the laboratory LOQs and/or were not detected above the most stringent ADEC cleanup criteria as defined in 18 AAC 75.341, tables B1 and B2.

The soil sample NM01-A-8 was collected from peat at a depth of 8-inches bgs near the school boiler day tank and exhibited a concentration of DRO at 1,320 mg/kg, which exceeds the migration to groundwater cleanup level of 250 mg/kg; however, not the ingestion cleanup level of 10,250 mg/kg. The LOQ for benzene (0.270 mg/kg) also exceeded the ADEC cleanup criterion in Sample NM01-A-8; which is typical for samples collected from peat. During field activities, a second sample was collected from the same location as NM01-A-8 (named NM01-A-18), however, from 18-inches bgs and did not exhibit any contaminant concentrations that exceeded the ADEC cleanup criteria (See Figure 3).

Based on analytical results, the remaining contamination in the area of NM01-A-8 does not appear to be migrating. The samples collected from the generator building day tank area, and the samples collected from all other locations, did not exhibit any contaminants that exceeded the most stringent ADEC cleanup criteria. For these reasons, and because there were no other visual or olfactory signs of contamination at this site, it is the opinion of the ADEC that the remaining contamination at NM01-A-8 is considered to be de-minims in quantity and is not a risk to human health or the environment.

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 of one across all exposure pathways. Based on a review of the environmental record, ADEC has determined that residual contaminant concentrations do not pose a cumulative human health risk.

Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using ADEC'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

Pathway	Result	Explanation
Surface Soil Contact	De-Minimis Exposure	Contamination remains in the surface soil (0 to 2 feet bgs), but is below the ingestion and inhalation cleanup levels.
Sub-Surface Soil Contact	De-Minimis Exposure	Analytical soil samples were not collected from the subsurface soils (2 to 15 feet bgs); however, soil samples were collected from 8 and 18-inches bgs and did not exhibit any contaminant concentrations that exceeded the ingestion or inhalation cleanup levels.
Inhalation – Outdoor Air	De-Minimis Exposure	Contamination is below inhalation cleanup levels.
Inhalation – Indoor Air (vapor intrusion)	Exposure Controlled	All structures are built on pilings and are elevated several feet off the ground. Additionally, all volatile compounds were detected below the direct contact and inhalation cleanup levels.
Groundwater Ingestion	De-Minimis Exposure	Water is supplied to the school from a well located approximately 400 feet north of the school. The water was sampled, prior to treatment, from the schools boiler room and did not contain any concentrations of DRO, RRO, or VOCs that exceeded the ADECs or EPAs drinking water standards. 2013 investigation results which included sampling of the school boiler day tank area showed one soil sample exhibited a concentration of DRO above the migrations to groundwater cleanup level; however, based on additional sampling it was determined that the contaminants in this area were not migrating, and are de-minims in quantity.

Table 2 – Exposure Pathway Evaluation Continued

Surface Water Ingestion	Pathway Incomplete	Surface water is not used as a drinking water source in the vicinity of the site. The entire area is known for ponding, however soil samples collected in the vicinity of standing water did not contain contaminant concentrations that exceeded the cleanup levels.
Wild and Farmed Foods Ingestion	Pathway Incomplete	Contaminants of concern do not have the potential to bioaccumulate in plants or animals.
Exposure to Ecological Receptors	Pathway Incomplete	Remaining contamination does not appear to be migrating and is considered de-minims.

Notes to Table 2: "De-Minimis Exposure" means that in ADEC's judgment receptors are unlikely to be affected by the minimal volume or concentration of remaining contamination. "Pathway Incomplete" means that in ADEC's judgment contamination has no potential to contact receptors. "Exposure Controlled" means there is an administrative mechanism in place limiting land or groundwater use, or a physical barrier in place that deters contact with residual contamination.

ADEC Decision

Remaining petroleum contamination in soil is below approved cleanup levels in most areas. Contamination remains in one area above the approved cleanup levels but does not appear to be migrating and is considered de-minims. This site will receive a "Closed" designation on the Contaminated Sites Database, subject to the following standard conditions.

Standard Conditions

1. Any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with 18 AAC 78.600(h). A "site" [as defined by 18 AAC 75.990 (115)] means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership.

2. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.

3. Groundwater in the state of Alaska is protected for aquaculture use. In the event that an aquaculture facility uses groundwater from this site in the future, additional testing may be required to ensure that aquatic life criteria under 18 AAC 70 are not exceeded.

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

Appeal

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving the department's decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or

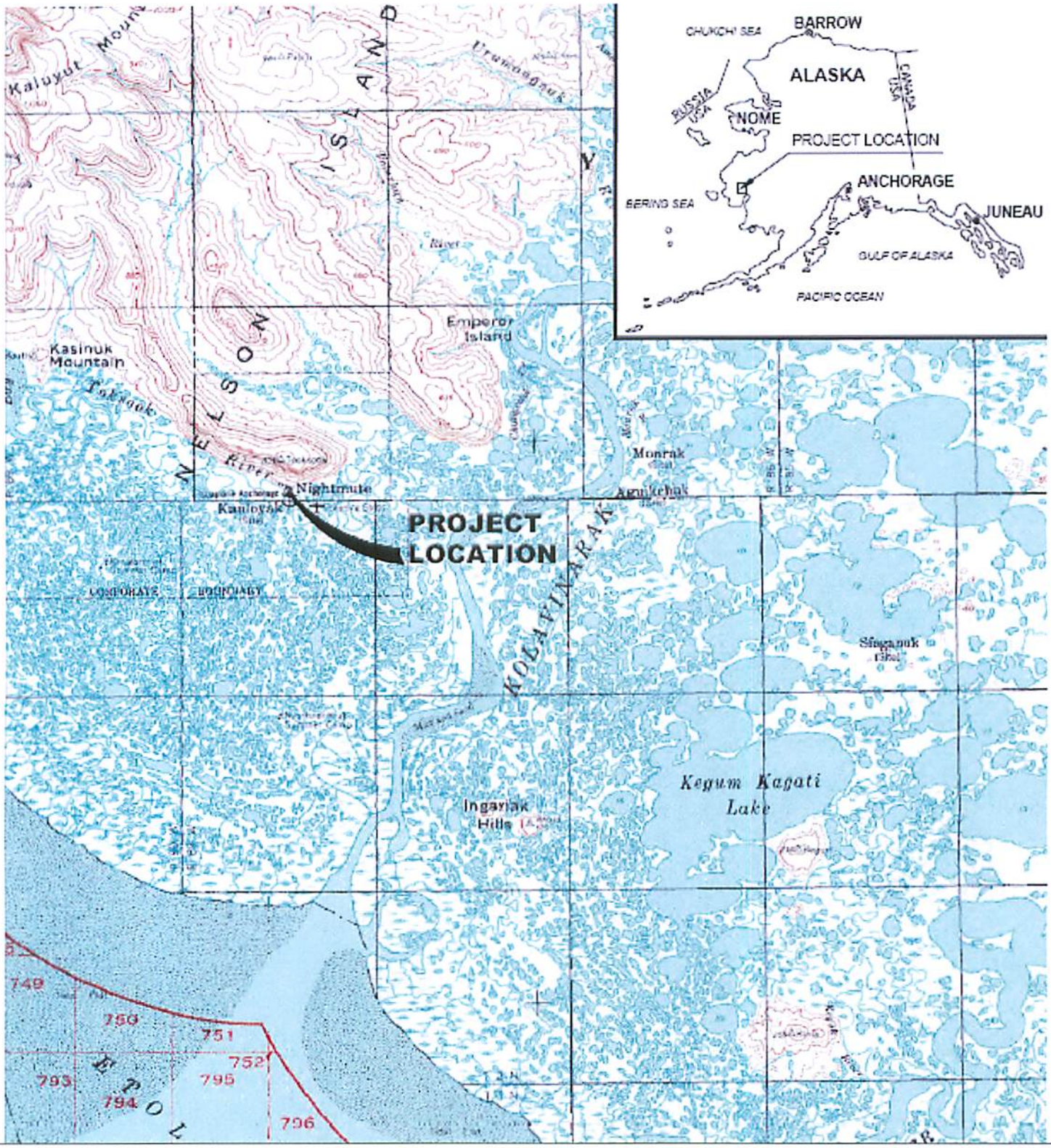
within 30 days after the department issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

If you have questions about this closure decision, please feel free to contact me at (907) 269-7691.

Sincerely,

Joshua Barsis
Environmental Program Specialist III

Enclosures: Figure 1, Figure 2, Figure 3



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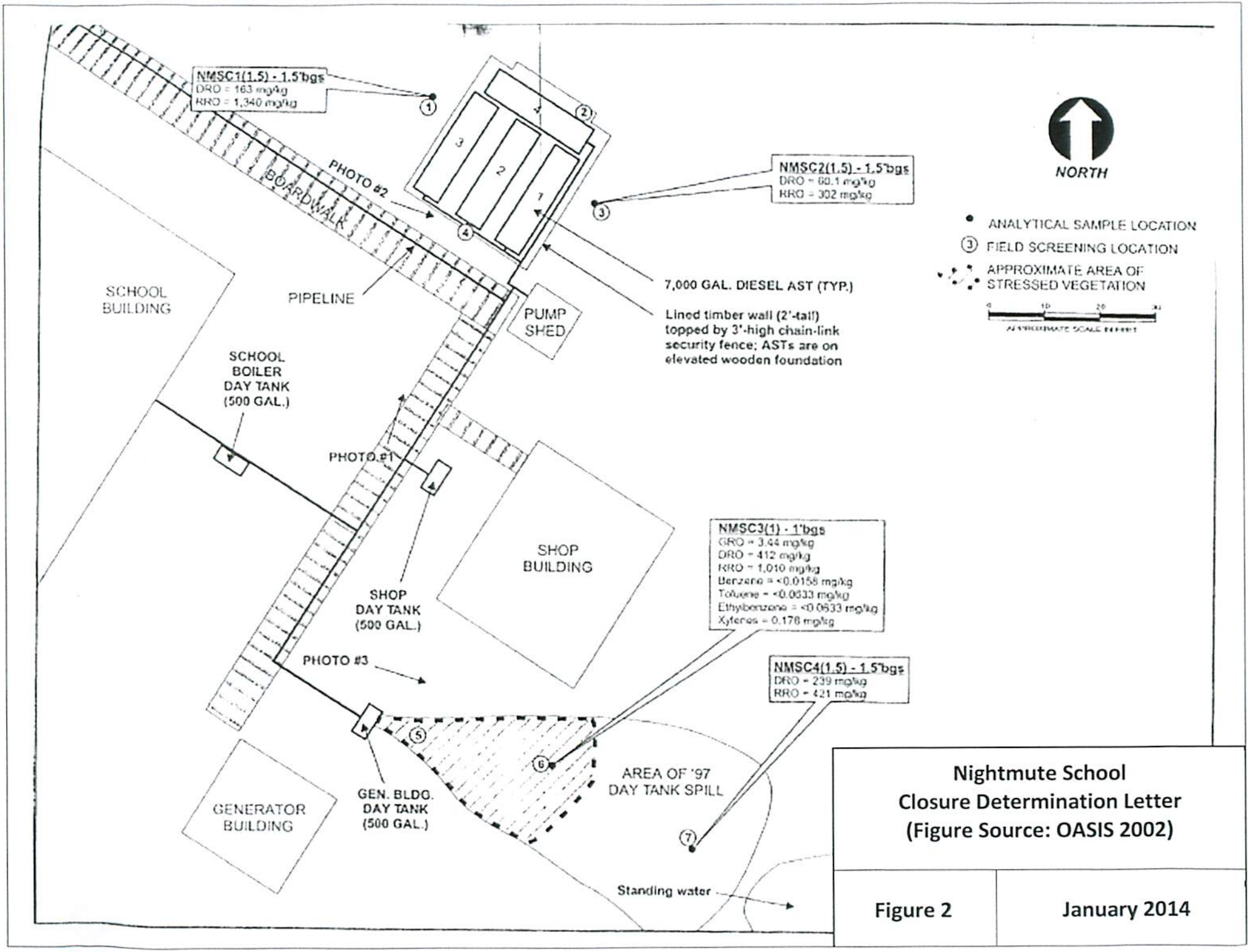
Scale in miles

Nightmute School Closure Determination Letter	
Figure 1	January 2014



Nightmute School
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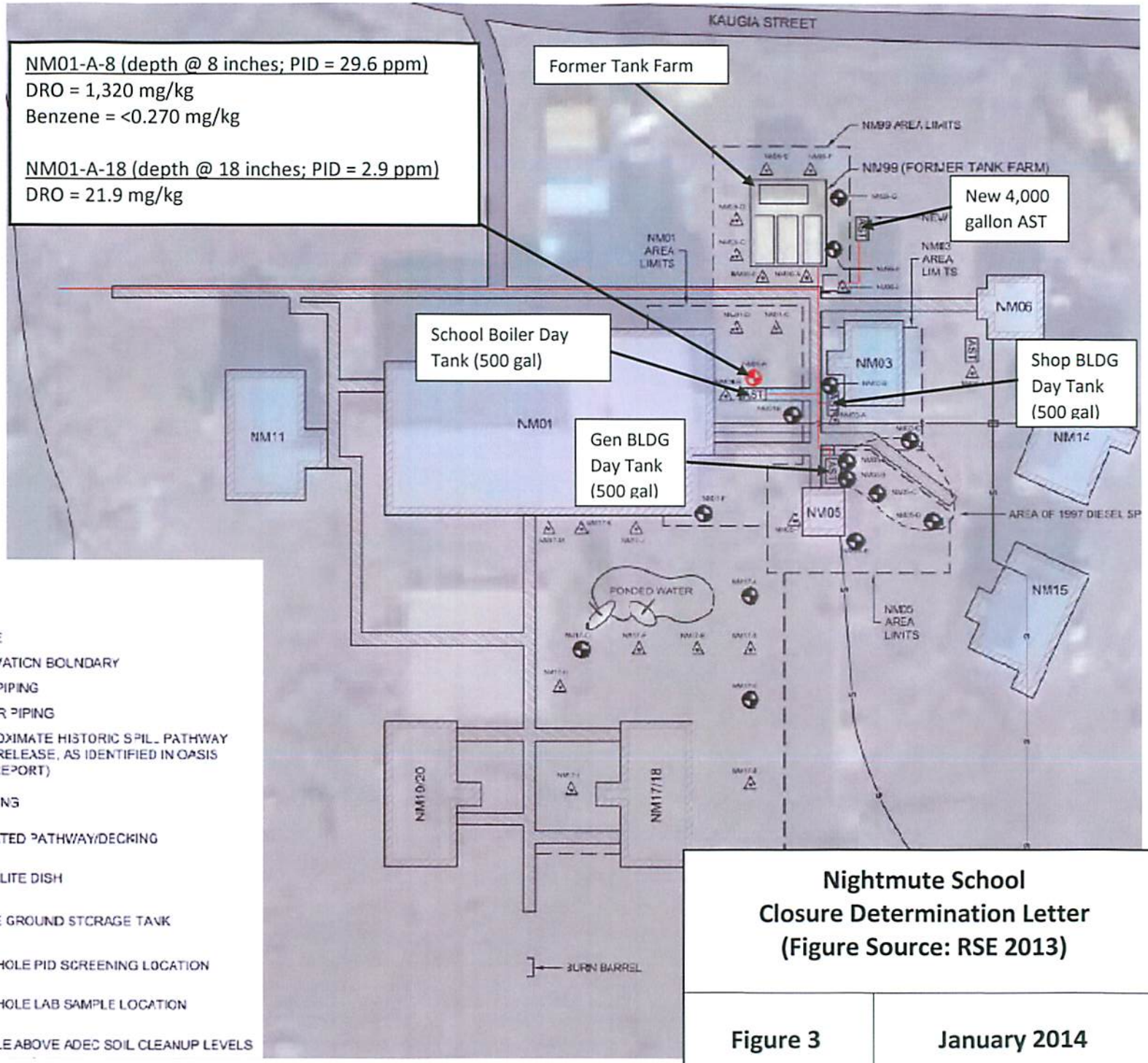
(Figure Source: OASIS 2002)

Figure 2	January 2014



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(Figure Source: RSE 2013)

Figure 3	January 2014