THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Environmental Conservation
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

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File No: 530.38.003

February 16, 2017

Bill Heubner
National Park Service – Anchorage
240 West 5th Avenue
Anchorage, Alaska, 99501

Re: Decision Document NPS Bering Land Bridge – Serpentine Hot Springs
Cleanup Complete Determination

Dear Mr. Heubner:

The Alaska Department of Environmental Conservation, Contaminated Sites Program (ADEC) has completed a review of the environmental records for the National Park Service (NPS) Bering Land Bridge, Serpentine Hot Springs site in the Bering Land Bridge National Preserve on the Seward Peninsula. 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 new information becomes available that indicates residual contaminants may pose an unacceptable risk.

This Cleanup Complete determination is based on the administrative record for the NPS Bering Land Bridge, Serpentine Hot Springs site, which is located in the ADEC office in Fairbanks, Alaska. This decision letter summarizes the site history, cleanup actions and levels, and standard site closure conditions that apply.

Site Name and Location
NPS Bering Land Bridge, Serpentine Hot Springs
Bering Land Bridge National Preserve
45 miles southeast of Shishmaref

Section 12, Township 5 North, Range 29 West, Kateel Meridian

DEC Site Identifiers
File No. 530.38.003
Hazard ID 25888

Regulatory Authority for Determination
18 AAC 75

Site Description and Background

Serpentine Hot Springs is located on a gravel spit in the south-central portion of the Bering Land Bridge National Preserve on the Seward Peninsula. Channels of the Serpentine River run on the north side and south side of the spit and join on the west end. The hot spring bubbles up on the west end of the spit. Groundwater is present near the surface at approximately 0.5-feet.

There is a bunkhouse on the eastern portion of the spit with three main spaces; a central common area, a west side dormitory, and an east side dormitory. The bathhouse is located on the west side of the spit and is fed hot water from the hot spring and cold water from the tributary on the south. An airstrip and outhouse are south and uphill from the bunkhouse and bathhouse.

In 2012, the two 55-gallon drums that were serving as heating oil tanks for the dormitories in the bunkhouse were replaced with new tanks and piping. Evidence of petroleum contamination was identified at both tank locations.

Contaminants of Concern and Cleanup Levels

Soil cleanup levels for this site are established in 18 AAC 75.341, Method 2, Tables B1 and B2, under 40-inch zone. Soil samples at this site have been analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX); gasoline range organics (GRO); diesel range organics (DRO); and polynuclear aromatic hydrocarbons (PAHs). DRO was detected above the cleanup level of 250-mg/kg. GRO was detected at concentrations below the cleanup level of 300-mg/kg. BTEX and PAH results were all non-detect. The table below presents the migration to groundwater cleanup levels for GRO and DRO.

Soil Cleanup Levels Table

Contaminants of Concern	Soil Cleanup Level
GRO	300 mg/kg
DRO	250 mg/kg

Surface water cleanup levels are established in 18 AAC 70.020. Surface water and pore water samples at this site have been sampled for BTEX and PAHs to calculate total aromatic hydrocarbons (TAHs) and total aqueous hydrocarbons (TAqH). The water quality standards are presented in the table below.

Water Quality Standards Table

Contaminant	Water Quality Standards
TAH	10 µg/L
TAqH	15 µg/L

Characterization and Cleanup Activities

In 2012, the NPS replaced the drums serving as fuel tanks at the bunkhouse, designated the west and east tanks. Approximately 0.4-cubic yards of petroleum contaminated soil was removed from under the west tank location, and approximately 0.6-cubic yards was removed from the east tank. Confirmation samples were collected for GRO, DRO, BTEX, and PAHs. Results showed DRO above the cleanup level in both locations, with a maximum concentration of 4,210-mg/kg at the east tank. The contaminated soil was taken to the airstrip and spread to approximately ¼ inch thick for treatment.

Groundwater was encountered approximately 6-inches below the ground surface in both excavations, and the groundwater and soil were warm. A sheen was observed on the water in the excavations, and after approximately 30 minutes, light non-aqueous phase liquid (LNAPL) appeared to be emanating from under the bunkhouse. Three additional test pits were dug to determine the extent of LNAPL contamination; one 6-feet south of the west tank, one between the two tanks, and one 6-feet south of the east tank. LNAPL was observed in the test pit 6-feet south of the west tank location; the other two test pits did not contain LNAPL.

In 2013, the floor boards near each of the stoves in the bunkhouse were removed to expose the underlying soil to determine the extent of remaining contamination. Test pits were dug adjacent to the copper piping extending 4 to 6 inches to the groundwater surface. Visual observations and field screening results did not indicate the presence of contamination under the bunkhouse near either tank location.

Test pits were excavated outside the bunkhouse in the areas where LNAPL was observed in 2012. At the west tank, LNAPL was present in an area approximately 8-feet wide and 10-feet long. At the east tank, LNAPL was present in an area approximately 6-feet wide and 5-feet long. A total of 1.3-cubic yards of contaminated soil was removed from the two locations and taken to the airstrip for treatment by thin spreading. Confirmation samples from the excavations were sampled for GRO, DRO, and BTEX, with one sample from each excavation also analyzed for PAHs. The maximum concentration of DRO detected was 53.3-mg/kg. GRO, BTEX and PAH results were all non-detect.

Two additional test pits were installed on the north side of the bunkhouse closest to the stoves to ensure that contaminated soil had not extended north of the building. No visual or olfactory evidence of contamination was observed, and field screening results did not indicate contamination. No analytical samples were collected.

Five pore water samples were collected along the stream on the south side of the bunkhouse, and one pore water sample was collected from the southeast corner of the hot pool at the closest point to the bunkhouse. Pore water samples were analyzed for BTEX and PAHs to calculate total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAqH). BTEX results were all non-detect. Several PAHs were detected below the cleanup levels. TAH and TAqH were below the water quality standards.

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 non-carcinogenic 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 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 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 or Pathway Incomplete. A summary of this pathway evaluation is included in the table below.

Exposure Pathway Evaluation Table

Pathway	Result	Explanation
Surface Soil Contact	De Minimis	Residual contaminant concentrations at this site are below the migration to groundwater cleanup levels.
Sub-Surface Soil Contact	Pathway Incomplete	No sub-surface contamination is present at this site. Excavation depths were less than 1 foot, and remaining concentrations are below migration to groundwater cleanup levels.
Inhalation – Outdoor Air	De Minimis	Residual contaminant concentrations at this site are below human health and outdoor air inhalation cleanup levels.
Inhalation – Indoor Air (vapor intrusion)	De Minimis	Residual contaminant concentrations at this site are below migration to groundwater cleanup levels. No evidence of contamination was observed beneath the building floorboards.
Groundwater Ingestion	De Minimis	Shallow groundwater was encountered at 6 inches below the ground surface. Residual soil contaminant concentrations are below the migration to groundwater cleanup level, and pore water sample results for BTEX and PAHs were non-detect or less than 1/10 of the groundwater cleanup level. Groundwater and soil were observed to be warm.
Surface Water Ingestion	De Minimis	Pore water and surface water samples are below water quality standards.
Wild and Farmed Foods Ingestion	Pathway Incomplete	Contaminants of concern are not bio-accumulative.
Exposure to Ecological Receptors	Pathway Incomplete	Contaminants of concern are not bio-accumulative.

Notes: "De Minimis Exposure" means that in ADEC's judgment receptors are unlikely to be adversely 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.

ADEC Decision

Soil 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, 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 75.325(i). 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. (See attached site figure)

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 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. In the event that groundwater from this site is to be used for other purposes in the future, such as aquaculture, 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 ADEC from requiring additional assessment and/or cleanup action if future information indicates that contaminants at this site may pose an unacceptable risk to human health, safety, or welfare, or to 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, 555 Cordova Street, Anchorage, Alaska, 99501-2617, 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, P.O. Box 111800, Juneau, Alaska, 99811-1800, 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.

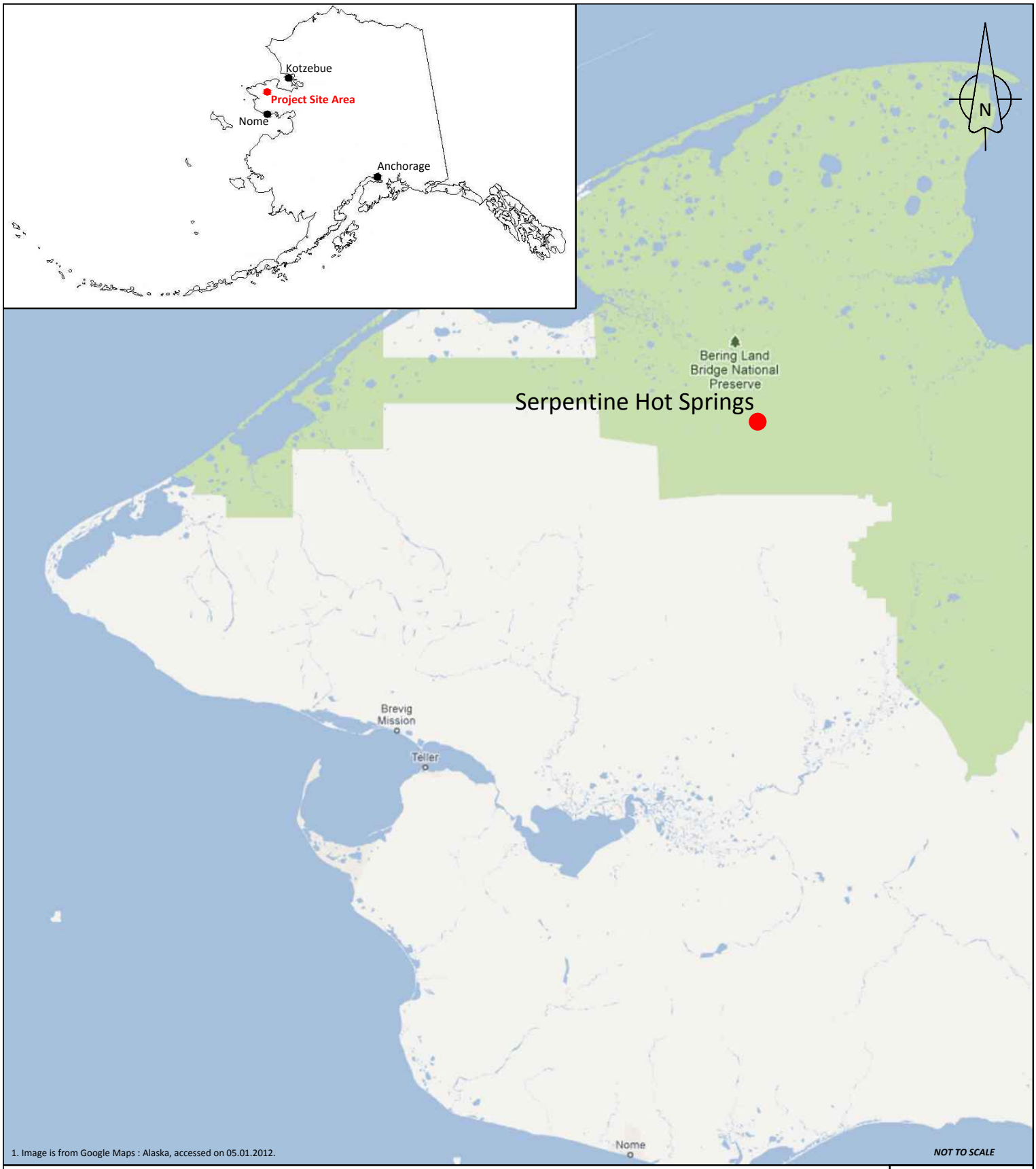
If you have questions about this closure decision, please feel free to contact me at (907) 451-5175 or email at melody.debenham@alaska.gov.

Sincerely,

Melody Debenham
Project Manager

Enclosures: Figure 1 – State and Site Vicinity Maps (Ahtna, 2013)
Figure 2 – Site Plan (Ahtna, 2013)
Figure 3 – Sample Locations (Ahtna, 2013)

Cc (via email): Spill Prevention and Response, Cost Recovery Unit



1. Image is from Google Maps : Alaska, accessed on 05.01.2012.

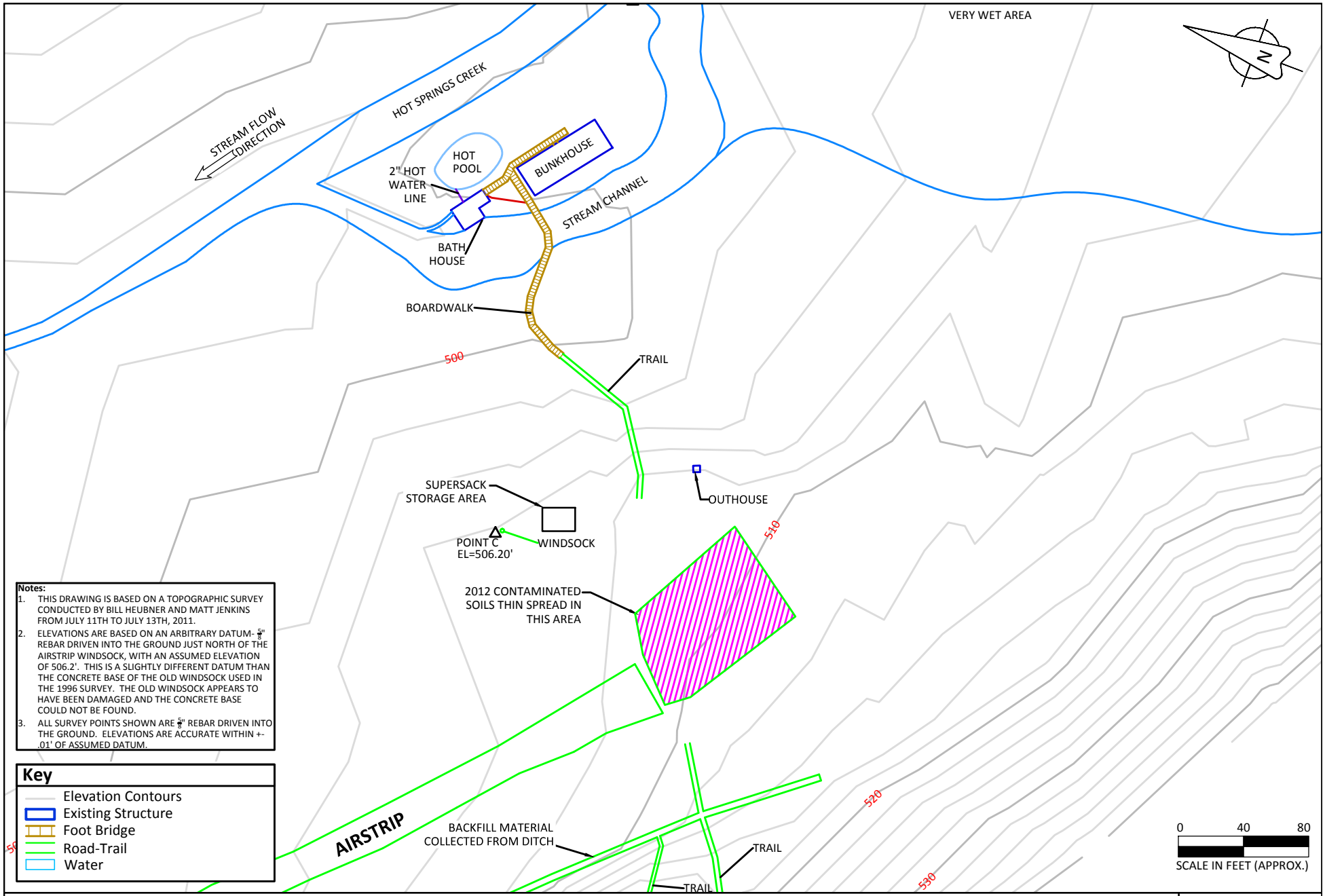
NOT TO SCALE

State and Site Vicinity Maps

Ahtna Engineering

Serpentine Hot Springs Site Assessment 2013
Bering Land Bridge National Preserve, Alaska

Project Number: 20194.3502	Figure Number:
Date: 10.21.2013	1
Drawn By: G.R.	



Notes:

1. THIS DRAWING IS BASED ON A TOPOGRAPHIC SURVEY CONDUCTED BY BILL HEUBNER AND MATT JENKINS FROM JULY 11TH TO JULY 13TH, 2011.
2. ELEVATIONS ARE BASED ON AN ARBITRARY DATUM- $\frac{5}{8}$" REBAR DRIVEN INTO THE GROUND JUST NORTH OF THE AIRSTRIP WINDSOCK, WITH AN ASSUMED ELEVATION OF 506.2'. THIS IS A SLIGHTLY DIFFERENT DATUM THAN THE CONCRETE BASE OF THE OLD WINDSOCK USED IN THE 1996 SURVEY. THE OLD WINDSOCK APPEARS TO HAVE BEEN DAMAGED AND THE CONCRETE BASE COULD NOT BE FOUND.
3. ALL SURVEY POINTS SHOWN ARE $\frac{5}{8}$" REBAR DRIVEN INTO THE GROUND. ELEVATIONS ARE ACCURATE WITHIN +- .01' OF ASSUMED DATUM.

Key

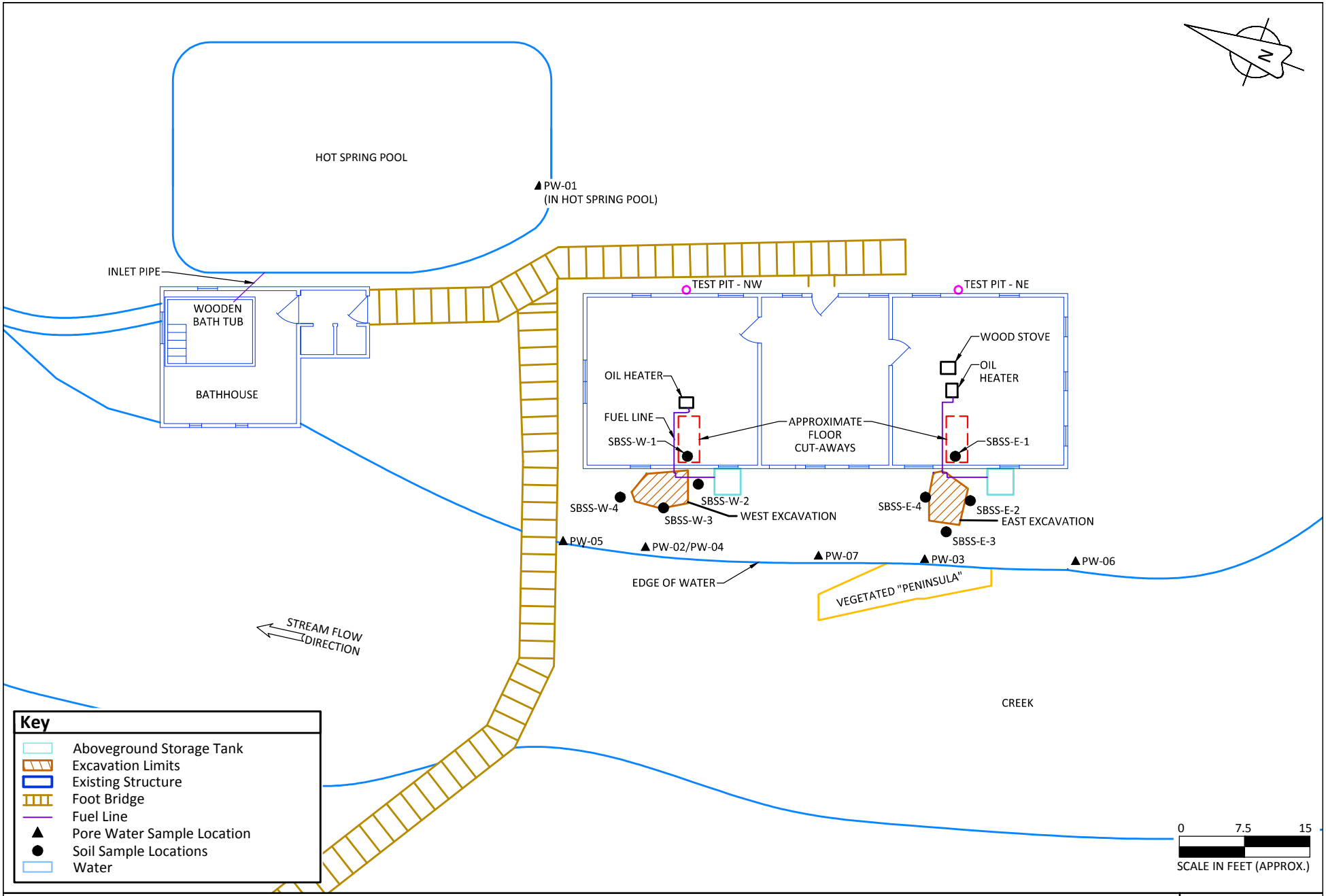
- Elevation Contours
- Existing Structure
- Foot Bridge
- Road-Trail
- Water

Site Plan

Ahtna Engineering

Serpentine Hot Springs Site Assessment 2013
Bering Land Bridge National Preserve, Alaska

Project Number: 20194.3502	Figure Number: 2
Date: 11.05.2013	
Drawn By: G.R.	



Sample Locations

Ahtna Engineering

Serpentine Hot Springs Site Assessment 2013
Bering Land Bridge National Preserve, Alaska

Project Number: 20194.3502	Figure Number: 3
Date: 11.05.2013	
Drawn By: G.R.	