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NIKOLSKI RRS
ALASKA

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 48

PROPOSED PLAN

FOR EIGHT SITES AT THE NIKOLSKI RRS

JULY 2004

INTRODUCTION

The U.S. Air Force is pleased to present this **proposed plan**[1] for cleanup actions at eight sites at the Nikolski Radio Relay Station (RRS), Alaska. If you are interested in voicing your comments or concerns, please attend a public meeting to be held at the Nikolski School on Wednesday, December 8, 2004 at 7:00 PM. If you will not be able to attend the meeting and would like to comment, please send in the comment form found at the end of this proposed plan. The public comment period begins on November 15, 2004 and ends on December 15, 2004. The Air Force values your input concerning these important matters.

The Nikolski RRS is located toward the southwest end of Umnak Island in the Aleutian Island chain, adjacent to the Village of Nikolski, Alaska. The sites covered in this proposed plan are shown on the adjacent aerial photo and include:

- AOC-01: dam and pump house foundation
- SS-002: former water supply house and aboveground storage tank
- SS-005: runway lighting vault building and underground storage tank
- SS-006: former drum storage area
- AOC-07: construction camp septic tank
- AOC-08: composite building septic tank and outfall
- AOC-09: two 20,000-gallon underground storage tanks
- OT-010: former transformer building and White Alice arrays

The purpose of this proposed plan is to:

- Summarize the nature and extent of contamination at each site
- Present cleanup levels that protect human health and the environment
- Describe cleanup alternatives that were considered
- Present the preferred cleanup alternative for each site and explain why it is preferred
- Solicit public comment on the proposed cleanup levels, the alternatives considered, and preferred cleanup alternatives

[1]Words that appear in bold type are defined in the glossary at the end of this Proposed Plan.

More detailed information about these sites and previous investigations can be found in various documents located at the information repository (see page 21 for details).

This proposed plan is required under the **National Contingency Plan (40 CFR 300.430)** and the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** to fulfill public participation requirements. The Air Force is the lead agency for addressing contamination at the facility.

Although preferred alternatives are presented for each of the sites, final decisions have not been made and will not be made until all comments submitted during the public comment period have been reviewed and considered. Changes to the proposed cleanup levels and preferred cleanup alternatives may be made if public comments or additional information indicates that such changes would result in more appropriate solutions.

SITE BACKGROUND

The Nikolski RRS was constructed in 1958, and operations began in 1961. The facility served as a communications site for 16 years and was deactivated in 1977. During its years of service, its mission was to provide reliable communications for the Air Force's Distant Early Warning (DEW) Line stations.

Soil and surface water contamination at the site has occurred as a result of accidental releases and from site operations. Sources of contaminants at the Nikolski RRS include:

- Leaks, spills, and overfills from various parts of the fuel distribution and storage systems
- Routine equipment maintenance that included use of industrial sewers and septic systems or direct discharge to the ground surface for the disposal of oils, solvents, and polychlorinated biphenyls (PCBs)
- Land disposal of waste
- Storage of drummed oils and solvents that leaked to the ground surface

Since the 1977 facility deactivation, a number of contaminant removal actions and investigations have taken place.

PCB Removal Action

In 1983, the Air Force investigated and removed soil contaminated by polychlorinated biphenyls (PCBs) from the transformer building (OT-010) and the old disposal area north of the construction camp (now LF-001). Six drums of transformer material and 36 drums of contaminated soil were removed and shipped to Elmendorf Air Force Base for disposal.

Site Demolition

In 1988, all aboveground structures, except for the runway lighting vault (SS-005) and the tanks and pump house at the petroleum, oil, and lubricants (POL) tank

area (SS-004), were demolished. Non-hazardous demolition material, including building debris and empty drums, was placed into the site demolition disposal area (LF-001). The area was covered with 2.5 to 4 feet of soil. Asbestos-containing material was placed in the asbestos portion of the landfill and covered with an 8-foot lift of soil. Hazardous materials generated during the 1988 demolition were transported via barge to the Elmendorf Air Force Base treatment, storage, and disposal facility.

Preliminary Assessment/Site Inspection

Studies at the site began in 1994 by gathering all historical information available for the Nikolski RRS. Following this, the site was visited in 1995 and 1996, when soil and water samples were collected to help locate areas needing more detailed investigation.

Drum Removal Action

Cleanup work began in 1997 at the former drum storage area (SS-006). At that time, the Air Force removed approximately 200 drums from this site and sampled soil, groundwater, and surface water to identify any areas of contamination. Results from this investigation showed fuels in the soil and solvents in the subsurface water in the area, both requiring further study.

Remedial Investigation

During the summer of 2001, a remedial investigation was conducted to define the nature and extent of contamination present at the facility. To this end, 85 soil borings were advanced, and 10 monitoring wells were installed. A total of 238 samples was collected including the following: 184 soil samples, 9 sediment samples, 16 surface water samples, and 11 groundwater samples. The results are summarized in this proposed plan.

Supplemental Remedial Investigation

The 2001 remedial investigation identified trichloroethene contamination (which is invisible and odorless at the given concentrations) at the construction camp septic tank (AOC-07); additional samples were collected in 2002 to define the extent of contamination present. The results are summarized in this proposed plan.

Feasibility Study

As outlined in the National Contingency Plan, the objective of a feasibility study is to develop and evaluate cleanup alternatives so that an appropriate remedy can be selected.

Because the majority of the contamination consists of petroleum hydrocarbons and trichloroethene, the feasibility study focused on cleanup options for those contaminants. Lead at AOC-01 was not specifically addressed in the feasibility study due to its limited volume. PCBs at OT-010 were not specifically addressed in the feasibility study because they degrade very slowly and no viable onsite technologies are currently available to treat PCBs. For each contaminant group,

a range of cleanup technologies were used to develop cleanup alternatives. These alternatives were then screened, and those with potential to effectively address the contamination were retained for detailed analysis.

Preferred alternatives for the Nikolski sites were selected based on criteria established by the U.S. Environmental Protection Agency and formally evaluated in the *Final Nikolski Feasibility Study*. The criteria used in this evaluation are organized into two groups: threshold criteria and balancing criteria (see text box that follows). The threshold criteria must be met for the candidate alternative to be selected. The balancing criteria are used to assess the alternatives that meet the threshold criteria.

A third group of criteria—modifying criteria—are not considered until after completion of the public comment period. The two modifying criteria—state acceptance and community acceptance—may prompt the Air Force to modify aspects of the preferred alternative or to decide that another alternative is more appropriate. This proposed plan solicits public review and comment on the alternatives described and solicits community and state input on the selected remedies. The criteria used in selecting remedies for each of the sites are summarized in the adjacent text box.

Criteria Used in Selecting a Remedy

Threshold Criteria

- Overall protection of human health and the environment: Will the alternative protect human health and plant and animal life on and near the area? The chosen cleanup plan must meet this criterion.
- Compliance with applicable or relevant and appropriate requirements: Does the alternative meet all pertinent federal and more stringent state environmental statutes, regulations, and requirements? The chosen cleanup plan must meet this criterion.

Balancing Criteria

- Long-term effectiveness and permanence: How reliable will the alternative be at long-term protection of human health and the environment? Is the contamination likely to present a potential risk again?
- Reduction of toxicity, mobility, and volume through treatment: Does the alternative incorporate treatment to reduce the harmful effects of the contaminants, their ability to spread, and the amount of contaminated material present?
- Short-term effectiveness: How soon will risks be adequately reduced? Are there short-term hazards to workers, the community, or the environment that could occur during the cleanup process?
- Implementability: Is the alternative technically and administratively feasible? Are the goods and services needed to implement the alternative readily available?
- Costs: Costs presented in this proposed plan are estimates of the capital cost and the present value of the long-term operation and maintenance of the alternative.

Modifying Criteria

- State acceptance: Do state environmental agencies agree with the recommendations? What are their preferences and concerns?
- Community acceptance: What suggestions or modifications do residents of the community offer during the comment period? What are their preferences and concerns?

SITE CHARACTERISTICS

The area surrounding the Nikolski RRS consists of low rolling hills dotted with many undrained depressions that form ponds following wet weather. Bedrock tends to be shallow throughout the area and is generally overlain by a distinct weathered bedrock zone. The surface soil is peat in most areas and fill material for the sites on High Hill.

Access to Umnak Island is via air or sea only. Nikolski has a 3,500-foot unlighted gravel airstrip that provides passenger, mail, and cargo service. The island has no port facilities for ships. Barges deliver cargo once or twice a year. A gravel road provides access between the Village of Nikolski and the main facility at the Nikolski RRS.

A number of contaminants have been identified at the site. There is a small volume of lead-contaminated soil at the dam and pump house foundation (AOC-01); the volume of this soil is estimated to be less than one cubic yard. At the former drum storage area (SS-006), there are approximately 76 cubic yards of soil that are contaminated with diesel-range organics and residual-range organics and approximately 400 cubic yards of soil contaminated with trichloroethene. Approximately 7.5 cubic yards of soil at the two 20,000 gallon underground storage tanks (AOC-09) are contaminated with residual-range organics. Approximately 272 cubic yards of soil at the former transformer building and White Alice arrays (OT-010) are contaminated with polychlorinated biphenyls.

SCOPE AND ROLE OF RESPONSE ACTION

This proposed plan addresses eight of the 13 sites at the Nikolski RRS, and is part of the Air Force's overall strategy for cleaning up contamination associated with the facility. To address contamination at the former composite building (OT-001), fuel pipeline (SS-003), petroleum, oil, and lubricant (POL) tank area (SS-004), and composite building POL outfall area (WP-007), a risk assessment was performed. These sites will be included in a separate proposed plan. The Landfill site (LF-001) has been closed and will be retired in accordance with the existing **Alaska Department of Environmental Conservation (ADEC)** landfill permits (#8421-BA009 and #8721-BA026) and applicable state solid waste regulations. Thus, the landfill site has not been included in this proposed plan.

SUMMARY OF SITE RISKS AND CLEANUP LEVELS

The overall cleanup objectives are to restore each site to a level that is protective of human health and the environment, and to comply with applicable or relevant and appropriate requirements.

To assess the risks that each site could pose to human health and the environment, contaminant concentrations were measured using analytical methods and compared to appropriate cleanup levels or other quantitative criteria. Potential exposure pathways considered in this analysis included:

- The inhalation of contaminants located in soil at depths of 15 feet or less
- The ingestion of soil located at depths of 15 feet or less
- The potential for soil contaminants to migrate to underlying groundwater
- The use of groundwater as drinking water
- The impacts that water in underground storage tanks could pose to human health or groundwater
- The impacts that contaminants could pose to the fresh water environment (stream) north of the dam and pump house foundation (AOC-01)
- The impacts that contaminants at the former drum storage area (SS-006) could pose to Nikolski Bay
- The impacts that PCBs in construction materials at the runway lighting vault building (SS-005) could pose to human health

The ADEC standards published in **18 AAC 75, Oil and Other Hazardous Substances Pollution Control**, govern the cleanup of sites contaminated with oil or other hazardous substances. These regulations address the selection or development of cleanup levels for contaminated soil and groundwater to protect human health and the environment. The proposed cleanup levels address both short-term (acute) and long-term (cancer) risks associated with the sites.

ADEC regulations provide four methods for determining soil cleanup levels:

- Method One is a standard table for soils contaminated only with petroleum hydrocarbons
- Method Two is a standard table for soils contaminated with petroleum hydrocarbons or other hazardous substances
- Method Three allows for modification of Method Two cleanup levels based on site-specific soil and groundwater data
- Method Four is a risk assessment

Methods One and Four were not used in the development of this proposed plan. Method Two cleanup levels are taken directly from the values listed in 18 AAC 75 and apply to the cleanup of all sites included in this proposed plan except for the construction camp septic tank (AOC-07), for which Method Three was used.

In developing Method Three cleanup levels for the construction camp septic tank (AOC-07), the only parameter that was changed from the default values listed in ADEC regulations was the fraction of the soil composed of organic carbon. Contaminants tend to accumulate on the surface of organic carbon, reducing their mobility. In other words, the higher the carbon concentration, the slower the migration of contaminants to groundwater. Based on analysis of soil samples performed by an independent laboratory, approximately 4.9 percent of the soil at the construction camp septic tank site is organic. (The state default value is 0.1 percent.)

Because no groundwater is present at the sites on High Hill (AOC-08: the composite building septic tank, AOC-9: two 20,000-gallon tanks, and OT-010: former transformer building), the migration to groundwater exposure pathway is not applicable. Therefore, only the inhalation and ingestion exposure routes apply to the soils at those sites.

Table 1 lists contaminants that have been detected at concentrations above the proposed cleanup levels, their maximum detected concentrations, and the source of the proposed cleanup level. These samples were collected during the 2001 and 2002 investigations.

Table 1: Summary of Soil Contaminants Detected above Proposed Cleanup Levels

Site	Contaminant	Maximum Detected Concentration	Proposed Cleanup Level by Exposure Pathway			Basis for Proposed Cleanup Level
			Ingestion	Inhalation	Migration to Groundwater	
AOC-01 Dam and Pump House Foundation	Lead	427	*400*	*400*	-	Method Two, Residential Land Use
SS-006: Former Drum Storage Area	Diesel-range organics	37,700	8,250	12,500	*2,300* [2]	Method Two, Groundwater Use Determination
	Residual-range organics	222,000	*8,300*	22,000	97,000 [2]	
	Trichloroethene	5.72	620	32	*0.2* [2]	
AOC-09: Two 20,000-Gallon Underground Storage Tanks [1]	Residual-range organics	8600	*8,300*	22,000	-	Method Two, No Migration to Groundwater Pathway
OT-010: Former Transformer Building and White Alice Arrays	Polychlorinated biphenyls	14.1	*1*	*1*	-	Method Two

All values are in **parts per million (ppm)**
Suspected laboratory contaminants and background concentrations of inorganic compounds are not listed in this table.
Values in italics are above proposed cleanup levels.
[1] Polynuclear aromatic hydrocarbon contamination at AOC-09 appears to be contiguous with polynuclear aromatic hydrocarbon contamination at OT-001. This contamination will be addressed under a separate proposed plan covering the OT-001 site.
[2] Because groundwater at this site is not a source of drinking water (18 AAC 75.350), the value listed is ten times the value listed in 18 AAC 75 Table B1 or B2.

Groundwater cleanup levels are based on the concentrations listed in Table C of the ADEC standards (18 AAC 75). Because a groundwater use determination for the former drum disposal area (SS-006) was developed under 18 AAC 75.350, the cleanup levels used at the site are ten times the values listed in Table C of 18 AAC 75. No contaminants were detected at concentrations in excess of these values. The available data indicate that contamination from the Nikolski RRS will not impact the drinking water supply for the Village of Nikolski.

The impacts that water in underground storage tanks could potentially pose to human health were assessed by comparing analytical results to the values listed in 18 AAC 75, Table C.

Analytical results for freshwater sediment samples were compared to ecologically based benchmark values protective of sediment-dwelling organisms in freshwater environments. Similarly, analytical results for marine sediment samples were compared to ecologically based benchmark values protective of sediment-dwelling organisms in marine environments. No analytical results exceeded these values.

Table 2: Summary of Water Contaminants Present in Underground Storage Tanks

Site	Analyte	Units	Detected Concentration	Proposed Cleanup Level
AOC-07: Construction Camp Septic Tank	lead	ppb	75.6	15
	benzo(a)pyrene	ppb	0.557	0.2
	dibenzo(a,h)anthracene	ppb	0.116	0.1
AOC-08: Composite Building Septic Tank	lead	ppb	26.2	15
	gasoline-range organics	ppm	1.83	1.3
	diesel-range organics	ppm	16.4	1.5
	residual-range organics	ppm	13.3	1.1
	PCB-1260 (arochlor 1260)	ppb	4.34	0.5
	benzo(a)anthracene	ppb	2.35	1
	benzo(a)pyrene	ppb	1.43	0.2
	benzo(b)fluoranthene	ppb	1.7	1
	dibenzo(a,h)anthracene	ppb	0.259	0.1
	1,1-dichloroethene	ppm	0.00925	0.007
	trichloroethene	ppm	0.167	0.005
	vinyl chloride	ppm	0.0134	0.002
	cis-1,2-dichloroethene	ppm	2.69	0.07
AOC-09: Two 20,000-Gallon Tanks	diesel-range organics	ppm	3050	1.5
	residual-range organics	ppm	31.3	1.1

ppb = parts per billion
ppm = parts per million

Regulatory limits proposed for surface water samples are the ADEC Water Quality Standards **(18 AAC 70)**. Only trichloroethene was detected at concentrations above this water quality level (Table 3).

Table 3: Summary of Surface Water Contaminants Detected above Proposed Cleanup Levels at each Site

Site	Contaminant	Maximum Detected Concentration (ppb)	Proposed Cleanup Level (ppb)	Basis for Proposed Cleanup Level
AOC-07: Construction Camp Septic Tank	Trichloroethene	111	5	Alaska Water Quality standards 18 AAC 70

Suspected laboratory contaminants and background concentrations of inorganic compounds are not listed in this table.
ppb = parts per billion

Potential risks posed by PCBs in construction materials were assessed based on the regulatory limit for PCBs established under **40 CFR 761.3**.

It is the Air Force's judgment that the preferred alternatives identified in this proposed plan, or the other active measures considered in this proposed plan, are necessary to protect public health or welfare or the environment from actual or threatened releases of pollutants or contaminants into the environment.

REMEDIAL ACTION OBJECTIVES

The following remedial action objectives have been established for the facility:

- Prevent ingestion, inhalation, or migration to groundwater of soil at the former drum storage area (SS-006) containing diesel-range organics in excess of 2,300 ppm and residual-range organics in excess of 8,300 ppm.
- Prevent migration of trichloroethene in excess of 0.2 ppm from soil at the former drum storage area (SS-006) to groundwater.
- Prevent human exposure to surface waters at the construction camp septic tank (AOC-07) containing trichloroethene in excess of 5 ppb.
- Prevent ingestion of soil at the two 20,000-gallon tanks (AOC-09) containing residual-range organics in excess of 8,300 ppm.
- Prevent ingestion or inhalation of surface soils at the former transformer building and White Alice arrays (OT-010) containing polychlorinated biphenyls (PCBs) in excess of 1 ppm.
- Prevent ingestion or discharge to the environment of liquids present in underground storage tanks at the runway lighting vault building (SS-005), construction camp septic tank (AOC-07), composite building septic tank (AOC-08), and two 20,000-gallon tanks (AOC-09).

A site-by-site discussion is provided in the following section. Included is a brief description of each site, a summary of analytical results, an explanation of the cleanup levels proposed, a summary of the cleanup alternatives considered, and the preferred alternative for each site.

AOC-01: DAM AND PUMP HOUSE FOUNDATION

The dam and pump house foundation are located at an unnamed creek north-northwest of the landfill area. The pump house has collapsed and remnants of the building, dam, and pump remain at the site. It is believed that the dam and pump house were the water source for the construction camp during facility construction in 1958.

Results

During the 2001 remedial investigation, soil screening was conducted, and one soil sample and two sediment samples were collected at the site. The samples were analyzed for gasoline-range organics, diesel-range organics, benzene, toluene, ethylbenzene, xlyenes, and metals. The only analytical result exceeding regulatory limits was lead in the soil sample, which was detected at a concentration of 427 ppm, exceeding the regulatory limit of 400 ppm.

Summary of Remedial Alternatives Considered

No cleanup alternatives for the site were evaluated in the feasibility study because the available data indicate that a continuous area of contamination is not present. The only contaminant detected at concentrations above regulatory

limits was lead (in one sample) at seven percent above the regulatory limit applicable to residential land use. Possible explanations for the elevated lead concentration include lead solder that might have been used for the water lines, lead paint, lead shotgun pellets, or the presence of leaded gasoline. No petroleum compounds were detected in the sample, and soils in the area screened for petroleum contamination showed no reaction, indicating that leaded gasoline is not present at the site.

Preferred Alternative

The preferred alternative for AOC-01 is no further action to address site contaminants.

SS-002: FORMER WATER SUPPLY HOUSE AND ABOVEGROUND STORAGE TANK

The former water supply house was located adjacent to the lake, approximately 2.5-road miles east-southeast of the composite building. The site served as the water supply for Nikolski RRS during its years of operation. A water supply house, concrete pad, and aboveground fuel storage tank were originally present, but have since been removed.

Results

During the 2000 site investigation, a surface water sample was collected from the lake; no contaminants were detected. During the 2001 remedial investigation, a small area of fuel-contaminated soil was discovered at the site as a result of field screening. A single drum of contaminated soil was excavated and shipped offsite for proper disposal. A confirmation soil sample was collected at the bottom of the excavation and analyzed for petroleum contaminants and lead. The sample contained no contaminants at concentrations above proposed cleanup levels.

Summary of Cleanup Alternatives Considered

No cleanup alternatives for the site were evaluated in the feasibility study because no contaminants remain at the site at concentrations exceeding proposed cleanup levels.

Preferred Alternative

The preferred alternative for SS-002 is no further action.

SS-005: RUNWAY LIGHTING VAULT BUILDING & UNDERGROUND STORAGE TANK

The runway lighting vault provided electricity and controls for the landing lights that surrounded the runway. The vault is located approximately 200 feet north of the west end of the airstrip. An underground storage tank that held leaded gasoline is located just north of the building.

Results

During the 2001 remedial investigation, 300 gallons of leaded gasoline were removed from the underground storage tank. Four soil borings were advanced in the area. Seven soil samples were collected and analyzed for petroleum contaminants and lead; all results were below proposed cleanup levels.

Also during the 2001 remedial investigation, 6,700 pounds of batteries were removed from inside the runway lighting vault. Five concrete chip samples and three wipe samples for PCBs analyses were collected inside of the vault. One of the five concrete chip samples contained PCBs at 2.01 ppm; PCBs were not detected in any of the other samples. The concentration detected is less than the standard of 50 ppm for total PCBs established in 40 CFR 761.

Summary of Cleanup Alternatives Considered

Because no contaminants have been detected at concentrations greater than proposed cleanup levels, no cleanup alternatives for the site were evaluated in the feasibility study.

Preferred Alternative

The 500-gallon underground storage tank still contains a small volume of fuel. The Air Force's preferred alternative is to close the tank in accordance with state regulations (18 AAC 78.085(c)).

SS-006: FORMER DRUM STORAGE AREA

The former drum storage area (SS-006) is located near the beach, west of the airstrip.

Results

In the fall of 1997, approximately 181 drums, many of which were in various stages of corrosion, were removed from SS-006. Drums containing liquids were sampled, and the contents were transferred into new drums. Drum contents included 17 drums of unused lube oil, 17 drums of used oil, 1 drum of antifreeze, and 1 drum half-full of chlorinated solvent; the remaining drums were empty. All original drums were steam cleaned (if necessary), crushed, and buried in a pit just southeast of the asbestos cell, located at LF-001. Unused oil and lubricants were consolidated into nine new drums and donated to the local power plant. All drums containing hazardous and non-hazardous waste were shipped offsite for proper disposal.

During the 2001 remedial investigation, 9 soil borings were drilled and 19 hand auger borings were advanced. Groundwater was encountered in four of the nine borings, less than a foot above bedrock. Monitoring wells were installed in two of the soil borings. Forty-six soil samples, three sediment samples, two surface water samples, and two groundwater

samples were collected. Samples were analyzed for a variety of compounds including: petroleum compounds, volatile organic compounds, polychlorinated biphenyls (PCBs), polyaromatic hydrocarbons, and metals. Contaminant concentrations in soils were above proposed cleanup levels (Table 1). In the southeast corner of the fenced area, a volume of soil contaminated with diesel-range organics, residual-range organics, and trichloroethene was identified. A second, smaller area of soil contaminated with diesel-range organics and residual-range organics was identified in the northeast corner of the fenced area. The total volume of contaminated soil is estimated to be 476 cubic yards. Contaminant concentrations in the sediment, surface water, and groundwater samples were below proposed cleanup levels.

Groundwater Use Determination

Groundwater beneath the site is neither a current nor a reasonably expected future source of drinking water. In accordance with 18 AAC 75.350, groundwater must be protected as a drinking water source unless (1) the water is not a current or reasonably-expected future source of drinking water and (2) the groundwater affected by the contaminant will not be transported such that it impacts a current or reasonably expected future source of drinking water. If these requirements are met for a site, a Groundwater Use Determination may be appropriate, and soil and groundwater cleanup levels may be modified as described in the following paragraphs.

A Groundwater Use Determination is appropriate at SS-006, former drum storage area, for the following reasons. The nearest public water supply (for the village of Nikolski) is approximately 1 air mile from this area and located in a different water shed. The layer of groundwater found at the site is thin and discontinuous, and groundwater samples collected showed some evidence of salt-water intrusion. These factors make the area an undesirable location for a well. Land use in this area will likely remain unoccupied. Groundwater flow is expected to be away from any potential well sites.

In accordance with 18 AAC 75.345(b)(2), if groundwater is not a suitable source of drinking water, then the applicable groundwater cleanup level is ten times the groundwater cleanup levels listed in Table C. All groundwater results were below these proposed cleanup levels. Similarly, the soil cleanup level for the site is the most stringent of the following three standards: the ingestion pathway standard, the inhalation pathway standard, or ten times the migration to groundwater pathway standard.

Summary of Cleanup Alternatives Considered (Alternatives also include the SS-006, AOC-09, and OT-010 Sites)

As part of the feasibility study, fuel-contaminated soil from across the facility, including the SS-006 and AOC-09 sites, was evaluated under a combined set of alternatives. The trichloroethene-contaminated soil at SS-006 was also included in these alternatives.

The following five cleanup alternatives were retained for detailed analysis during the feasibility study.

- Alternative POL-1—No Action: A no action alternative is required for consideration under the National Contingency Plan and serves as a baseline against which other alternatives can be compared.

- Alternative POL-2—Landfarming: Landfarming involves spreading contaminated soil in a thin layer, perhaps on a liner, over the ground surface. The soil may be tilled, fertilized, and watered to speed cleanup by biological breakdown of contaminants.

- Alternative POL-5—**Thermal Treatment**: Thermal treatment converts fuel contaminants into heat, carbon dioxide, and water. Treatment could be performed on or offsite.

- Alternative POL-8—Hot Spot Removal with **Institutional Controls**: This alternative provides a middle ground between the no action alternative and the thermal treatment alternative. The soils with the highest concentrations of contaminants would be removed and treated offsite. Natural processes would be relied upon to degrade the remaining fuel contamination. Institutional controls, also called land use controls, would be used to protect human health until the cleanup levels are achieved.

- Alternative POL-9—**Bioventing** and Thermal Treatment: Bioventing adds oxygen to the contaminated soil to stimulate naturally occurring microorganisms and biodegrade soil contaminants. Offsite thermal treatment would be used for soils that cannot be successfully treated with bioventing.

These alternatives also serve as a catchall for the various minor cleanup activities that need to be performed at the facility. Soils contaminated with PCBs (present at the OT-010 site) cannot be adequately treated using landfarming, onsite thermal treatment, or bioventing, and will be shipped offsite to a permitted treatment, storage, and disposal facility.

Evaluation of Alternatives

All of the alternatives, with the exception of the no action alternative, would attain the threshold criteria.

Landfarming would treat all of the soil, and was the least expensive of the alternatives considered. However, it would be difficult to implement, particularly given the need to place a liner beneath the soil in an area known for high winds. Landfarming would require a period of years to obtain the remedial action objectives.

Hot spot removal with institutional controls would have relatively low costs and be relatively easy to implement, but would require decades to achieve the remedial action objectives. The ability of this alternative to provide long-term effectiveness is limited, given expected difficulties in implementing institutional controls at this remote site.

Bioventing and thermal treatment would treat all of the contamination present. However, it would be relatively difficult to implement due to the need to transport large volumes of soil offsite. In addition, it would require years to achieve the remedial action objectives.

Thermal treatment (Alternative POL-5) attains the best balance of trade-offs with respect to the five balancing criteria. Although thermal treatment is relatively expensive and this alternative will be challenging to implement, thermal treatment would treat all of the soil thoroughly, rapidly, and effectively.

Preferred Alternative

The Air Force's preferred alternative for the former drum disposal area is to excavate and thermally treat the contaminated soil. The decision of whether thermal treatment will take place onsite or offsite will be made once decisions have been made on how to address contamination present at Nikolski RRS sites not included in this proposed plan.

Since the Air Force stopped using the Nikolski facility and removed all drums from the site, numerous new drums as well as vehicles and tanks have been dumped at the site. This situation was reported to the ADEC in 1991, and ADEC has assigned site number RECKEY 2002250101001 to this non-Air Force site. The contamination resulting from these drums, vehicles, and tanks is not associated with Air Force activities; cleanup of this non-Air Force contamination is not included in this proposed plan.

Excavation and thermal treatment will rapidly and thoroughly address the contamination at the former drum disposal area that is associated with Air Force activities.

AOC-07: Construction Camp Septic Tank

AOC-07 is a 2,000-gallon septic tank located south of the landfill/disposal area (LF-001). Two vent pipes extend from the top of the tank, and a discharge pipe runs beneath the ground out of the southeast corner of the tank.

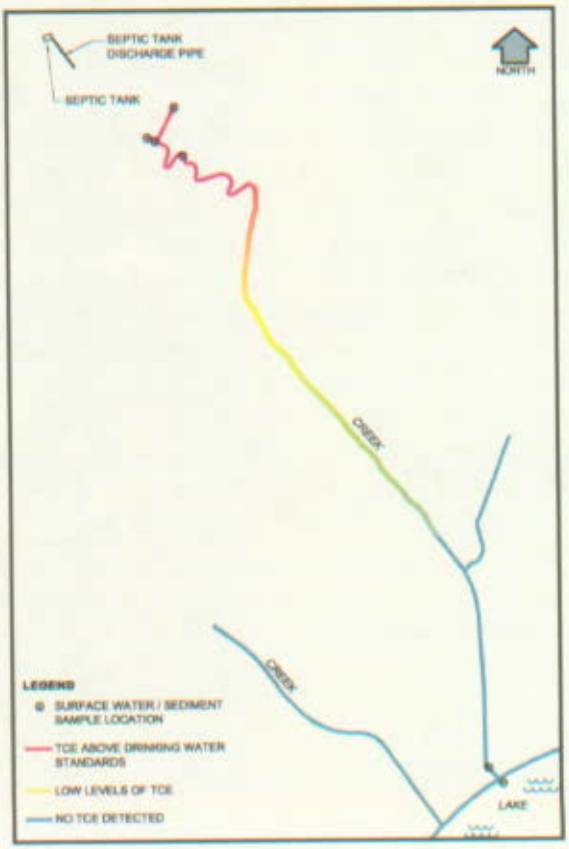
Results

Investigation at AOC-07 was conducted in 2001 and 2002. Initially, a series of test pits was excavated that confirmed that the structure is a septic tank. Water samples were collected from both vent pipes (Table 2). Lead and two fuel compounds (benzo(a)pyrene and dibenzo(a,h)anthracene) were above proposed cleanup levels, and one sample contained concentrations of trichloroethene (0.7 ppb) below proposed cleanup levels (5 ppb).

Fourteen hand auger borings were advanced, and 17 soil samples were collected and analyzed for volatile organic compounds. Some samples also were analyzed for diesel-range organics and residual-range organics. No soil was found with contaminant concentrations above proposed cleanup levels.

Six surface water/sediment samples were collected from the downgradient seeps as well as the lake and analyzed for volatile organic compounds. Trichloroethene (TCE) contamination was detected in the upgradient portion of the seeps. The maximum concentration detected was 111 ppb; the drinking water standard for TCE is 5 ppb. Concentrations in the downgradient portion of the seeps, in the lake, and in all of the sediment samples were below proposed cleanup levels (Figure 1).

Figure 1: Trichloroethene at AOC-07



Summary of Cleanup Alternatives Considered

CERCLA guidance allows for the use of presumptive remedies to treat contaminated water. Given the small quantity of water present in the septic tank (2,000 gallons), the lack of utilities, and the contaminants present, granular activated carbon is the best technology available to treat the water inside the septic tank. To address the surface water contamination, the three cleanup alternatives listed below received detailed analysis as part of the feasibility study.

- Alternative TCE-1—No Action: A no action alternative is required for consideration under the National Contingency Plan and serves as a baseline against which other alternatives can be compared.
- Alternative TCE-2—Institutional Controls with Long-Term Monitoring: Under this alternative, surface water monitoring would be conducted to assess the concentrations of TCE discharging to the seep below the construction camp septic tank. Institutional controls would be used to prevent a change in the current land use that could result in unacceptable exposures.
- Alternative TCE-5—Permeable Treatment Barrier: A permeable treatment barrier would be constructed across the stream. The barrier would be constructed of reactive iron and would degrade TCE as the water flows through.

Evaluation of Alternatives

The available data indicate that TCE is leaching from site soils, being carried downgradient in a thin layer of groundwater, and discharging to a pair of seeps below the site. Once it discharges, the TCE rapidly volatilizes. No TCE has been detected in the lake.

The monitoring component of Alternative TCE-2 would seek to demonstrate that seasonal variations in groundwater flow would not cause unacceptable concentrations of TCE to reach the lake. Although the concentrations of TCE detected to date at the head of the seeps exceed the drinking water standard, unacceptable exposures are highly unlikely given the current land use. Institutional controls would be needed to prevent a change in land use, such as the construction of residential housing, which could cause unacceptable exposure.

Alternative TCE-5: Permeable Treatment Barrier would provide better long-term effectiveness, permanence, and reduction in toxicity through treatment than Alternative TCE-2. However, this alternative costs three times as much as Alternative TCE-2 and poses the potential for significant environmental impacts. Although the permeable treatment barrier would remove and permanently degrade the TCE present in the stream, it also would remove all dissolved oxygen and increase the pH of the water. Although natural processes are expected to restore dissolved oxygen and pH levels before the stream reaches the lake, the environmental impacts of construction to the surrounding landscape and the degradation of water quality parameters could outweigh the benefits of removing the TCE.

Preferred Alternative

The Air Force's preferred alternative for AOC-07 is Alternative TCE-2: Institutional Controls with Long-Term Monitoring. Under the preferred alternative, the Air Force proposes to treat the water within the AOC-07 septic tank using pH adjustment and granular activated carbon adsorption and to abandon and close the tank in place after filling it with inert material in accordance with the Installer's Manual for Conventional Onsite Domestic Wastewater Treatment and Disposal Systems (ADEC 2000). The period and frequency of monitoring would be determined based on initial results and in consultation with the ADEC. Given the current land use, this alternative should provide the best balance of achieving the remedial action objectives and protecting the environment.

AOC-08: COMPOSITE BUILDING SEPTIC TANK AND OUTFALL

This 8,000-gallon septic tank served the composite building and discharged down the northwest cliff face of High Hill. The tank and discharge pipe remain in place.

Results

During the 2001 remedial investigation, a sample of the water inside the septic tank was collected. Laboratory analysis indicated that a number of analytes were present at concentrations above cleanup levels. These analytes included lead, fuel products, PCBs, and chlorinated solvents (Table 2).

A soil boring was advanced approximately 15 feet southeast of the tank, and a soil sample screened for fuel contamination; no fuel contamination was detected. It was not possible to collect a soil sample from directly below the outlet of the discharge line due to the vertical drop of the cliff and the lack of soil at that point. A soil sample was collected from the base of the cliff below the discharge line. No compounds were detected at concentrations above cleanup levels.

Summary of Cleanup Alternatives Considered

CERCLA guidance allows for the use of presumptive remedies to treat contaminated water. Given the small volume of water present, the lack of utilities, and the contaminants present, granular activated carbon is the best technology available to treat the water in the AOC-08 septic tank.

Preferred Alternative

The Air Force's preferred alternative for AOC-08 is to treat the contaminated water from the septic tank using pH adjustment and granular activated carbon adsorption. Following removal and treatment of the water, the Air Force proposes to abandon the tank in place after filling it with inert material in accordance with the Installer's Manual for Conventional Onsite Domestic Wastewater Treatment and Disposal Systems (ADEC 2000).

AOC-09: TWO 20,000-GALLON UNDERGROUND STORAGE TANKS

Two 20,000-gallon underground storage tanks and associated concrete vaults are located north of the former composite building along the west edge of High Hill. These underground storage tanks received diesel fuel pumped via the fuel pipeline (SS-003) from the POL storage tanks (SS-004).

Results

There are three distinct zones of contamination present at AOC-09. First, approximately 7,300 gallons of water contaminated with diesel-range organics and residual-range organics is present within the tanks themselves (Table 2). Second, approximately 7.5 cubic yards of soil contaminated with residual range organics are present in the concrete vault situated

on top of the northeastern tank (Table 1). Third, a volume of soil contaminated with polynuclear aromatic hydrocarbons is present. The polynuclear aromatic hydrocarbon contamination is under the composite building and associated White Alice arrays (OT-001) site, and will be addressed under the proposed plan for that site.

Summary of Cleanup Alternatives Considered

CERCLA guidance allows for the use of presumptive remedies to treat contaminated water. Given the small volume of water present, the lack of utilities, and the contaminants present, granular activated carbon is the best technology available to treat the water in the AOC-09 tanks.

As part of the feasibility study, fuel-contaminated soil from across the facility was evaluated under a combined set of alternatives. The residual-range organics-contaminated soil at AOC-09 is included in these alternatives, which are discussed under the section describing cleanup alternatives for the former drum storage area (SS-006).

Preferred Alternative

The Air Force proposes to pump the contaminated water from the two 20,000-gallon underground storage tanks, pre-treat the water with an oil-water separator, then treat the water using granular activated carbon. The tanks will be closed and abandoned in place in accordance with ADEC regulations (18 AAC 75.085(c)). The 7.5 cubic yards of soil contaminated with residual-range organics in the vault on top of the northeastern tank will be excavated and thermally treated. These actions will permanently destroy the site contaminants. Polynuclear aromatic hydrocarbons in soil around the tanks will be addressed in a future proposed plan.

OT-010: Former Transformer Building and Associated White Alice Arrays

The transformer building was located along the site access road about one-third mile before reaching the composite building.

Results

In 1983, the Air Force conducted an environmental investigation and PCB removal action. Thirty-six drums of PCB-contaminated soil were excavated and shipped offsite for disposal. All aboveground structures associated with this site were demolished in 1988.

Five soil borings, three hand auger borings, and five test pits were used to assess residual contamination at the site during the 2001 remedial investigation. Sixteen samples were field screened for petroleum and PCBs, five samples were analyzed at a laboratory. An area in which PCB contamination exceeded proposed cleanup levels was identified beneath the former transformer building site (Table 1). Approximately 272 cubic yards of PCB contaminated soil are present. Petroleum concentrations were all below proposed cleanup levels.

In addition, a 1,500-gallon septic tank was found. The top of the tank had been knocked off, presumably during site demolition, and it was filled with soil and rocks. A soil sample was collected from the tank and analyzed for petroleum compounds, volatile organic compounds, semivolatile organic compounds, polyaromatic hydrocarbons, PCBs, and metals. The concentrations of all analytes were below proposed cleanup levels.

PCBs in soil were the only contaminant found at concentrations above proposed cleanup levels. The Method Two standard for PCBs listed in 18 AAC 75.341 is 1 ppm for unrestricted land use.

Summary of Cleanup Alternatives Considered

As part of the feasibility study, fuel-contaminated soil from across the facility was evaluated under a combined set of alternatives. These alternatives include the PCB-contaminated soil at OT-010 and are discussed under the section describing cleanup alternatives for the former drum storage area (SS-006).

Preferred Alternative

Because PCBs degrade very slowly and no viable onsite treatment technologies are currently available, the Air Force's preferred alternative is to excavate the contaminated soil at OT-010 and to treat the soil offsite. No additional action is proposed to address the septic tank, because all analytes were below proposed cleanup levels and the tank has previously been abandoned in place.

SUMMARY

Table 4 summarizes the preferred alternatives for each of the sites. Taken together, the preferred alternatives form a comprehensive response to the contamination at these eight sites. If implemented as a stand-alone action, cleanup of these sites would cost approximately $1.9 million. However, a significant portion of this cost is associated with mobilization and demobilization and it is envisioned that the work included in this proposed plan will be integrated with any other cleanup actions required at the facility. Thus, actual cleanup costs are likely to be considerably less.

Table 4: Summary of Preferred Alternatives

Site	Summary of Preferred Alternative
AOC-01: dam and pump house foundation	No further action to address site contaminants (lead) because of the low concentration and limited volume of contaminated soil
SS-002: former water supply house and aboveground storage tank	No further action because no contaminants have been detected above cleanup levels
SS-005: runway lighting vault building and underground storage tank	Close the underground storage tank in accordance with state regulations
SS-006: former drum storage area	Excavate and treat the contaminated soil
AOC-07: construction camp septic tank	Treat the contaminated water from the septic tank Close the septic tank in place in accordance with state regulations Monitor surface waters to ensure that unacceptable concentrations of trichloroethene do not reach the lake Implement institutional controls to prevent a change in land use
AOC-08: composite building septic tank and outfall	Treat the contaminated water from the septic tank Close the septic tank in place in accordance with state regulations
AOC-09: two 20,000-gallon underground storage tanks	Treat the contaminated water from the two underground storage tanks Close the underground storage tank in accordance with state regulations Use thermal treatment to address the residual-range organics-contaminated soil
OT-010: former transformer building and White Alice arrays	Excavate the PCB-contaminated soil and treat it offsite

Based on the information currently available, the Air Force believes that the preferred alternatives presented in this proposed plan meet the threshold criteria and provide the best balance of tradeoffs with respect to the balancing criteria. The Air Force expects the preferred alternative to satisfy the following statutory requirements of CERCLA §121(b):

- Protect human health and the environment
- Comply with applicable or relevant and appropriate requirements
- Provide cost-effective measures
- Utilize permanent solutions and alternative treatment technologies to the maximum extent practicable
- Satisfy the preference for treatment as a principal element

GLOSSARY

18 AAC 70: Alaska state Water Quality Standards

18 AAC 75: **Alaska Oil and Other Hazardous Substances Pollution Control regulations.** A copy of 18 AAC 75 can be found at the ADEC's web site at http://www.state.ak.us/dec/spar/csp/regs.htm

40 CFR 761: The federal regulation determining cleanup levels for polychlorinated biphenyls (PCBs)

Alaska Department of Environmental Conservation (ADEC): the state agency responsible for protecting public health, safety, and welfare, and the environment from adverse effects of environmental contamination

bioventing: a treatment technology that injects air into subsurface soil to increase the activity of indigenous bacteria and rapidly degrade contaminants to non-hazardous compounds

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): a federal law, commonly known as Superfund, which established a nationwide process for cleaning up hazardous waste sites

National Contingency Plan (40 CFR 300.430): the federal regulation that establishes cleanup processes for most hazardous waste sites

institutional controls: stipulations, such as deed restrictions, covenants, or land use restrictions, designed to reduce or eliminate exposure to contaminants at a site

parts per billion (ppb): a measure of concentration, which for water is approximately equivalent to micrograms per liter (µg/L), and which for soil is equivalent to micrograms per kilogram (µg/kg)

parts per million (ppm): a measure of concentration, which for water is approximately equivalent to milligrams per liter (mg/L) and which for soil is equivalent to milligrams per kilogram (mg/kg)

proposed plan: a document that summarizes for the public the preferred alternative for a site and presents the rationale for that preference

thermal treatment: A treatment technology that heats contaminated soil to volatilize contaminants. The contaminant vapor is subsequently burned.

COMMUNITY PARTICIPATION

You are encouraged to provide comments on the preferred alternatives for the eight sites discussed in this proposed plan. Your comments can make a difference in choosing cleanup alternatives. The Air Force will not select a final course of action until all public comments received during the public comment period have been reviewed and considered.

Your comments may be presented in writing or at the public meeting. A pre-addressed comment form is included in this proposed plan and can be used to provide written comments.

The public meeting to discuss the proposed cleanup actions for the Nikolski RRS, answer questions, address concerns, and receive public comments will be held at Nikolski School on Wednesday, December 8, 2004 at 7:00 PM.

The Air Force will prepare written responses to all significant comments received regarding this proposed plan. A summary of these responses will accompany the decision document and will be made available in the Administrative Record at the Information Repository noted below.

Information on the Nikolski RRS site can be obtained from the Administrative Record at Elmendorf Air Force Base and the Information Repository at the Nikolski School.

U.S. Air Force
611th CES/CEVR
10471 20th Street, Suite 348
Elmendorf AFB, AK 99506-2270
(907) 552-7303

Nikolski Information Repository
c/o Nikolski School
Nikolski, AK 99638

The administrative record and information repository contain site information, including the following documents regarding this proposed plan:

- Final Remedial Investigation, Nikolski Radio Relay Station, Nikolski, Alaska, February 2002.
- Final Supplemental Remedial Investigation for Sites AOC-07 and SS-004, Nikolski Radio Relay Station, Nikolski, Alaska, October 2002.
- Final Feasibility Study, Nikolski Radio Relay Station, Nikolski, Alaska, March 2003.

You are encouraged to comment on this proposed plan. The public comment period begins on November 15, 2004 and ends on December 15, 2004. Public comments postmarked by December 15, 2004 will be addressed. Send your comments to:

611th CES/CEVR Mr. Scott Tarbox
Nikolski Project Manager
10471 20th Street, Suite 347
Elmendorf AFB, AK 99506-2200
(907) 552-7303 / (800) 222-4137

For questions regarding ADEC regulations, please contact:

Ms. Deb Caillouet
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501-2617
(907) 269-0298

Please use this sheet to present any comments that you may have on the Proposed Plan for Eight Sites at the Nikolski RRS.

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