Proposed Plan
Air Force Proposes Environmental Restoration Alternatives for West Perimeter Road TCE Spill (Site SS025) with Soil Impacts – Public Comments Invited

A. INTRODUCTION

The purpose of this *Proposed Plan (PP)* is to present to the general public and interested stakeholders the preferred remedial alternative for managing potential risks associated with soil contamination at the West Perimeter Road Trichloroethene (TCE) Spill (Site SS025) at the Former Galena Forward Operating Location (FOL), Alaska, and to solicit comments on the recommended *remedial alternative*. The PP summarizes information that can be found in greater detail in the *Remedial Investigation* (RI), Supplemental RI, and *Feasibility Study* (FS) Reports and other documents contained in the *Administrative Record* (AR) for the site. Italicized words or phrases are defined in the glossary at the end of this document.

Site SS025 is subject to the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* process. In accordance with the *Defense Environmental Restoration Program*, the U.S. Air Force (Air Force), representing the Office of the Secretary of Defense, is the CERCLA lead agency responsible for environmental response actions at the Former Galena FOL. Because the site is not listed on the National Priorities List, the *Alaska Department of Environmental Conservation (ADEC)* is the lead regulatory support agency. The PP is a document the lead agency (the Air Force) is required to issue to fulfill the requirements of 42 United States Code (U.S.C.) § 9617 CERCLA §117(a) and *National Contingency Plan* (NCP) Title 40 Code of Federal Regulations (C.F.R.) §300.430(f) (2).

Figure 1 shows where Site SS025 is in the CERCLA process leading to the implementation of a remedy. An RI has been conducted at Site SS025 to determine the types, quantities and extent of contamination and to develop ways to address the contamination. The RI found that:

- Surface and subsurface soil at Site SS025 is contaminated with TCE and other chlorinated solvents. Contamination in soil is over an area of approximately 40,000 square feet.
- There is no site-related *groundwater* contamination at Site SS025. Petroleum hydrocarbon contamination exists beneath Site SS025, however, this contamination is from a plume that originates at the Million Gallon Hill

Community Involvement Opportunities

Public comments on this Proposed Plan (PP) will be considered before a final remedy is selected for this site.

Public Comment Period
Through 5:00 p.m., November 28, 2016
The public is encouraged to send written comments regarding information provided in this PP and supporting documents to:

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Phone: (210) 395-9421
*All mailed comments must be postmarked by November 28, 2016.

General Questions/Comments may also be referred to the Air Force Public Affairs team at (866) 725-7617 or afcec.pa@us.af.mil.

Public Meeting
Date: October 26, 2016 Time: 7:00 p.m.

The public is encouraged to attend a community meeting to discuss the information presented in this PP. There will be an opportunity to ask questions and provide formal comments during the meeting. Representatives from the Air Force and ADEC will participate. The meeting will be held at the following location:

Larsen Charlie Community Hall
Galena, AK

Information Repository & Administrative Record (AR)
The Remedial Investigation (RI), Risk Assessment, Supplemental RI and Feasibility Study can be found in the AR located at:

The Charles Evans Community Library,
Antoski Street (inside Galena High School),
Galena, AK 99741 (907) 656-1205.

All supporting documents can also be found online at:
http://www.afcec.af.mil/Home/BRAC/Galena.aspx or directly at:
http://afcec.publicadmin-record.us.af.mil/Search.aspx
To search for supporting documents, select BRAC, select Galena, then enter the reference AR# into the Full Metadata Search field for easy access. AR numbers for supporting documents can be found at the end of this PP.

(MGH) tank farm and is not associated with Site SS025.

Figure 2 shows the site layout and area of soil contamination. In the FS for Site SS025 the following alternatives were evaluated to mitigate risks associated with soil contamination at the site:

- **Alternative 1**: No Action
- **Alternative 2:** Impose land use controls (LUCs) until all *cleanup* levels (CULs) are achieved.
- **Alternative 3a:** Apply *soil vapor extraction (SVE)* to remove contaminants from the soil that are above Migration to Groundwater CULs, use performance monitoring to verify the removal of contaminants, and impose LUCs to mitigate potential exposures until CULs are achieved.
- **Alternative 3b:** Apply SVE to remove contaminants from the soil that are above Human Health CULs, use performance monitoring to verify the removal of contaminants, and impose LUCs to mitigate potential exposures until CULs are achieved.
- **Alternative 4:** Excavate the contaminated soil, dispose of it outside of Galena, apply SVE to treat the remaining contaminated soil and impose LUCs until CULs are achieved.

The Air Force's preferred alternative for Site SS025 is **Alternative 3b** because it will achieve all *Remedial Action Objectives* (RAOs) to protect human health and the environment (see Section F) and is also cost effective.

Public input is important to the remedy selection process. New information or opinions the Air Force or ADEC learn during the *public comment period* could result in the selection of remedial actions that differ from the proposed preferred alternative. The Air Force encourages public comment on this PP and all alternatives described or other material in the AR, either at the public meeting scheduled for October 26, 2016, or by written comment. The public will have until the end of the comment period (November 28, 2016) to submit written comments. A comment sheet is provided as an attachment to this PP. After comments from the public have been received and considered, a *Record of Decision* (ROD) document will be written. The ROD will include a summary of any comments received during the public review period along with an explanation of how the comments changed the decision that was reached, if applicable. After the ROD is finalized, the remedy will be implemented following the completion of the *Remedial Design/Remedial Action* Work Plan.

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Figure 1 – CERCLA Process

B. SITE BACKGROUND

B.1 Galena FOL History

The Former Galena FOL was established as an airfield during World War II and most recently served as a forward operating base for the Pacific Air Force's 611th Air Support Group headquartered at Elmendorf Air Force Base, Alaska. The Former Galena FOL was recommended for closure by the Department of Defense (DoD) *Base Closure and Realignment Act* Commission in 2005 and was officially closed September 30, 2008.

Today, the Air Force Civil Engineer Center (AFCEC) manages the environmental cleanup for the Air Force at the Former Galena FOL. Regulatory support is provided by ADEC.

B.2 Site SS025 History

The perimeter dike was constructed in the 1940s to protect the Galena Airport from annual flooding. The dike was reported to have been constructed of used 55-gallon drums that had been crushed or filled with sand. However, investigation of the dike as part of a study at Site SS007 did not find evidence to support this.

Waste oil, hydraulic fluid, spent solvents, waste fuel, and other shop waste generated at Galena FOL and Campion Air Force Station were applied to the Galena Airport roads until 1983 or 1984. These materials were accumulated by the Air Force and provided to the State of Alaska because the state had the responsibility for maintaining roads and grounds at the installation. Oily waste assisted in controlling fine dust particles typically found in soil in the Galena area. Prior to 1966, which is when the property was officially transferred to the State of Alaska, several agencies may have been responsible for road maintenance at Galena, including the Air Force, Civil Aeronautics Administration, and Bureau of Land Management.

The primary constituents of concern (COCs) at Site SS025 are chlorinated volatile organic compounds (VOCs) such as TCE. There is no other historical information about potential chlorinated VOC releases along West Perimeter Road apart from application of waste fluids to airport roads for dust suppression. Initial sampling was conducted as part of the CG001 site characterization in 2010 and 2011. Because petroleum was the primary contaminant at Site CG001, West Perimeter Road was designated as a separate site (*i.e.*, Site SS025) because of the presence of TCE in subsurface soil samples.

B.3 Previous Public Participation Activities

The Air Force and ADEC, through the Galena Restoration Advisory Board, work with local stakeholders, including the Louden Tribal Council and City of Galena to address any environmental concerns at the Former Galena FOL. The Galena Restoration Advisory Board consists of the Air Force and ADEC representatives and government and community stakeholders including the Alaska Department of Transportation, the Bureau of Land Management, US Fish and Wildlife Service, City of Galena, Galena Interior Learning Academy, Louden Tribal Council, Gana-A'Yoo, and private citizens. The Restoration Advisory Board meets twice a year to promote community involvement and disseminate information on the progress of environmental restoration activities.

In an effort to involve the community in the decision-making process, the public is given the opportunity to comment on the Air Force's recommendations through public meetings and review and comment of PPs.

The Air Force also established a community outreach program to notify area residents and interested parties about upcoming meetings, major site activities, and site restoration progress. Periodic newsletters, which are available on the AFCEC website (http://www.afcec.af.mil/Home/BRAC/Galena.aspx), are published to inform the public about the progress of the environmental cleanup.

AFCEC and ADEC Contact Information

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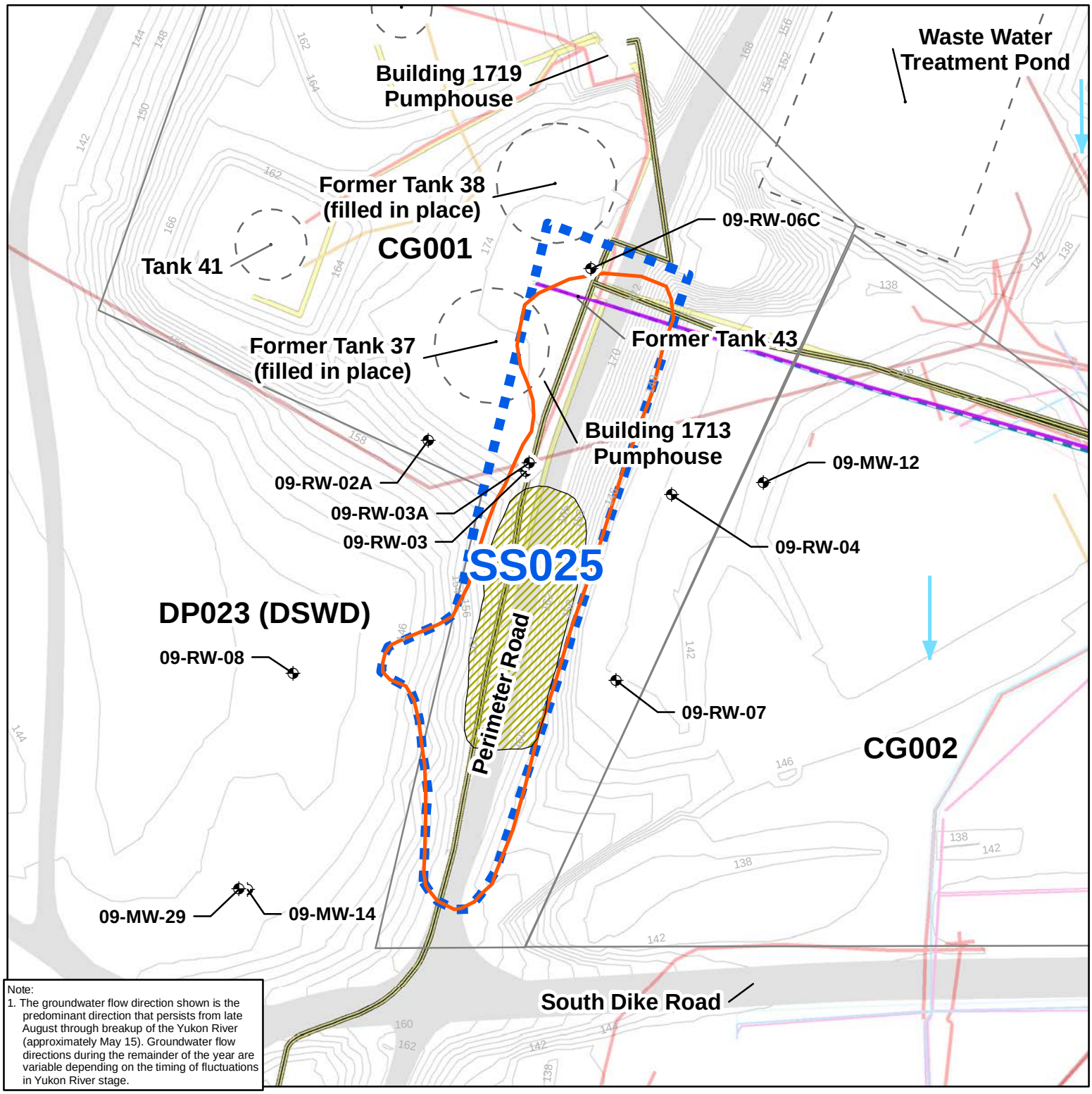
C. SITE CHARACTERISTICS

Figure 2 shows the estimated area of soil contamination at Site SS025 and locations of major site features.

Site SS025 is located along the western edge of the cantonment "triangle," east and south of the former MGH bulk petroleum, oil, and lubricants (POL) storage facility. Site SS025 is located along West Perimeter Road almost entirely within the boundary of Site CG001. West Perimeter Road is owned and maintained by the Alaska Department of Transportation (ADOT). The boundary of Site SS025 presented on **Figure 2** includes the *source area* of site-related contaminants. Potential sources of contamination are unknown but may include application of waste oil to the road surface to control dust, historical spills or releases, or possibly placement of contaminated fill material.



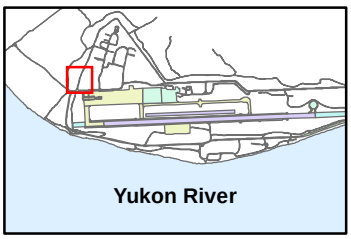
Note:
1. The groundwater flow direction shown is the predominant direction that persists from late August through breakup of the Yukon River (approximately May 15). Groundwater flow directions during the remainder of the year are variable depending on the timing of fluctuations in Yukon River stage.

Legend

- Approximate Groundwater Flow Direction
- Main Wastewater Line
- Service Wastewater Line
- Water Line
- Heating/Cooling Line

Underground Utility Locates - 2010

- Communications
- Electrical
- Fuel/Gas
- Potable Water
- Sanitary Sewer
- Active Fuel Line (Not Part of Site OAP)
- 1952 and 1962 Underground Pipeline (Not Visible on Aerials)
- Abandoned Fuel Line (1962)
- Site SS025 Boundary
- Monitoring Well
- Area of Soil Contamination
- Estimated Extent of Constituents in Soil with Concentrations Exceeding Human Health Method Two CULs
- Ground Surface Elevation



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Feet

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Figure 2

Site SS025 Layout and Area of Soil Contamination

Proposed Plan for SS025
Former Galena Forward Operating Location, Alaska

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PARSONS

Figure 3 is a photograph of the Site SS025 area.

The former MGH tank farm borders the north half of Site SS025 and woodlands border the south half and east side of the site. Site DP023, formerly known as the Disposal Site West of Dike (DSWD), is located along the west side of the site. A wastewater treatment pond is located northeast of the site. An underground fuel pipeline runs along the west edge of the road from the South Dike Road into the former MGH tank farm and then turns east to the POL tank farm. Site CG001 straddles West Perimeter Road and Site CG002 is located immediately east of Site CG001. The ground surface along Site SS025 is approximately 160 feet above mean sea level where it intersects the South Dike Road, and rises to the north to approximately 174 feet amsl where it passes the MGH tank farm, beyond which the ground surface begins to decrease in elevation. The ground surface forms a dike that slopes steeply away from the road on both the east and west sides, except where the road passes the MGH tank farm. The west side of the road along the tank farm is relatively level. The Yukon River is approximately 1,160 feet south of Site SS025.

The geology of Site SS025 is dominated by unconsolidated (loose, not rock-like) sediments deposited by the Yukon River to depths of at least 550 feet bgs. Soil beneath West Perimeter Road consists of sand and gravel road surfacing over silt, silty sand, and sand that ranges in depth from approximately 1 to 4 feet bgs to approximately 30 to 39 feet bgs. These materials are underlain by 18 to 23 feet of poorly-graded to well-graded sand to depths of approximately 38 to 61 feet bgs. Beneath this, sand and gravel was observed to total depths of 58 to 80 feet bgs.

Groundwater at Site SS025 exists in an aquifer that consists mainly of interlayered sand and gravelly sand. The aquifer extends to depths greater than 200 feet bgs.

The groundwater flow direction and elevation of the groundwater surface at Site SS025 varies throughout the year, because both are dependent on the water level in the Yukon River. From August/September to May, groundwater surface elevations are generally higher in wells farther from the river and groundwater flows south toward the river. As the water level in the river rises in May, the groundwater surface elevations become higher near the river and the groundwater flows to the north, away from the river. The water level in the Yukon River typically decreases in mid to late June, and groundwater once again flows south toward the river. From mid-June to September, the groundwater surface elevation and flow direction can change often, depending on small fluctuations that occur in river water levels. If the water level in the river increases, groundwater will flow north, away from the river. Similarly, decreases in the river water level cause the groundwater to flow south, toward the river.

Figure 3 –Site SS025 – View to the south from West Perimeter Road.

Because of these seasonal changes in groundwater flow, and the variation in ground surface elevations at Site SS025 (ground elevation ranges from 160 to 174 feet above mean sea level), the depth to groundwater varies depending on the location. In the lowest areas of the site, the depth to groundwater ranges from approximately 22 to 45 feet bgs. In the highest areas of the site, the depth to groundwater ranges from approximately 37 to 59 feet bgs.

C.1 Environmental Investigations

An RI and Supplemental RI were completed at Site SS025 to determine the nature and extent of contamination. The RI field work was primarily completed in 2013 and the Supplemental RI field work was completed in 2015. Field work for Site SS025 consisted of soil sampling, soil vapor sampling and collecting groundwater grab samples. Soil samples were collected from “surface soil” (0 to 2 feet bgs), “combined surface and subsurface soil” (0 to 15 feet bgs), and “deep soil” (greater than 15 feet bgs) and analyzed for various contaminants. The most recent basewide groundwater sampling events, which included sampling at Site SS025, were conducted from 2010 to 2014. Groundwater sampling was also conducted as part of the Supplemental RI in 2015.

C.2 Soil

Soil samples collected at Site SS025 were analyzed for *gasoline range organics* (GRO), *diesel range organics* (DRO), *residual range organics* (RRO), VOCs, metals, semi-volatile organic compounds (SVOCs), polynuclear aromatic compounds (PAHs), pesticides, and polychlorinated biphenyls (PCBs).

COCs at Site SS025 were detected to depths of 35 to 37 feet bgs. COCs are the site-related contaminants that pose an unacceptable risk to human health and/or the environment. COCs are selected based on (1) results of the risk assessment, and (2) comparing concentrations of contaminants to applicable CULs and background threshold values. They are the basis for determining the scope/design of the remedy for a site. Further information on selection of COCs can be found in the FS Report in the AR.
COCs identified at Site SS025 include TCE, tetrachloroethene (PCE), 1,1,2,2-tetrachloroethane (1,1,2,2-PCA), 1,1,2-trichloroethane (1,1,2-TCA), cis-1,2-dichloroethene (cis-1,2-DCE), and trans-1,2-dichloroethene (trans-1,2-DCE).

In samples collected from 2010 through 2015, the maximum concentration of each COC exceeded the CUL. The maximum concentrations of COCs, along with its respective CUL is presented in **Table 1.**

Table 1. COCs in Soil

COC	Maximum Concentration (mg/kg)[1]			Cleanup Level (mg/kg)[3]
	Surface Soil 0-2 ft bgs[2]	Combined Surface/ Subsurface Soil 0-15 ft bgs	Deep Soil >15 ft bgs	
PCE	0.0331	0.173	0.356	0.024
TCE	0.294	3.5	13.9	0.02
1,1,2, 2 – PCA	NA[4]	0.18	50.7	0.017
1,1,2-TCA	NA	0.109	0.747	0.018
cis-1,2-DCE	NA	0.867	3.64	0.24
trans-1,2-DCE	NA	NA	0.96	0.37

Notes:
[1] mg/kg = milligrams per kilogram
[2] ft bgs = feet below ground surface
[3] Soil CULs are the lowest applicable levels from ADEC Tables B1 or B2 Method Two CULs (under 40-inch zone) per 18 AAC 75.341, updated October 2008
[4]NA = not applicable because the chemical was not classified as a COC in this medium

Potential sources of contamination are unknown but may include application of waste oil on the road surface to control dust, historical spills or releases, or possibly placement of contaminated fill material. Contamination appears to have spread laterally and vertically in the area surrounding this portion of West Perimeter Road.

C.3 Soil Vapor

Results of screening-level passive soil vapor sampling conducted during the RI were used as an additional line of evidence to support the delineation of the extent of contamination at Site SS025. Based on the passive soil sampling data, TCE may exceed Method Two CULs for human health in an approximately 150 foot long section of the road (**Figure 2**).

C.4 Groundwater

Groundwater samples at Site SS025 were analyzed for GRO, DRO, RRO, VOCs, metals, SVOCs, PAHs, pesticides, and PCBs. None of the VOCs associated with the Site SS025 soil (i.e., TCE, PCE, cis-1,2-DCE, trans-1,2-DCE, 1,1,2,2-PCA, and 1,1,2-TCA) were detected in groundwater at the site at concentrations exceeding CULs. Petroleum compounds were detected in groundwater above CULs beneath Site SS025 but are attributed to, and will be cleaned up as part of the MGH Tank Farm site (CG001).

D. SCOPE AND ROLE OF RESPONSE ACTION

The overall cleanup strategy for Site SS025 is to achieve ADEC closure status of "Cleanup Complete". The proposed response action for Site SS025 addresses all contaminated soil and groundwater and exposure pathways. No *principal threat wastes* are present at Site SS025.

E. SUMMARY OF SITE RISKS

E.1 Human Health Risks

The comparison of contaminant concentrations in soil at Site SS025 to the ADEC Method Two CULs for soil and ADEC Table C CULs for groundwater indicate that there may be unacceptable risks to the following *receptors*:

Current and future occupational workers: Potential exposures to chemicals in surface soil, indoor air, outdoor air and groundwater. Potentially complete exposure routes to surface soil include incidental soil ingestion, dermal contact with soil, and inhalation of ambient vapors or dust generated from wind. Potentially complete routes of exposure to groundwater include ingestion, dermal contact, and inhalation of VOCs. *Vapor intrusion* from VOCs in environmental media migrating into future occupational buildings is also a potentially complete exposure route.

Hypothetical future residents: Potential exposure to chemicals in surface soil, combined surface and subsurface soil, indoor air, outdoor air and groundwater. Potentially complete exposure routes to soil include incidental soil ingestion, dermal contact with soil, and inhalation of ambient vapors or dust. Potentially complete routes of exposure to

groundwater include ingestion, dermal contact, and inhalation of VOCs. Vapor intrusion from VOCs in environmental media migrating into future residences is also a potentially complete exposure route.

Although there appears to be unacceptable risk to hypothetical future residents and future occupational workers from exposure to groundwater, this risk is from petroleum hydrocarbons released from Site CG001. Petroleum hydrocarbons (i.e., DRO and GRO) along with petroleum constituents (i.e., benzene, 1-methylnaphthalene, naphthalene, and the trimethylbenzenes) in groundwater originate from sources at Site CG001 and extend beneath Site SS025. The risks associated with releases from Site CG001 will be addressed in the Site CG001/CG002 Cleanup Plan.

Other chemicals (DRO, PAHs, and VOCs) and metals (arsenic) have been detected at Site SS025 that may also contribute to cumulative risk to human health. Additional information regarding current and future effects of all contaminants detected at Site SS025 on human health including carcinogenic and non-carcinogenic risks can be found in the AR in the *Human Health Risk Assessment* (HHRA) completed for Site SS025.

E.2 Ecological Risk

An ecological risk assessment was not conducted for Site SS025 because there are no potentially complete aquatic ecological exposure pathways and the surface of West Perimeter Road within Site SS025 is not critical habitat and does not host any valued, threatened, or endangered species. Potential exposures to ecological receptors within the wooded habitat on the banks of West Perimeter Road within Site SS025 are addressed in screening level ecological risk assessments for either Sites CG001/CG002 or Site DP023 (the Disposal Site West of Dike).

E.3 Risk Assessment Conclusion

It is the lead agency's current judgement that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of pollutants or contaminants from this site which may present an imminent and substantial endangerment to public health or welfare.

F. REMEDIAL ACTION OBJECTIVES

RAOs are specific goals for protecting human health and the environment from risks and hazards associated with site-related contamination. RAOs can be accomplished by ensuring humans are not exposed to contamination or by reducing concentrations of COCs to levels considered by ADEC to be protective. Specifically, the Air Force proposes the following RAOs for response actions at Site SS025:

RAO 1: Prevent the exposure of human receptors to concentrations of contaminants in soil that pose a cumulative *carcinogenic risk* greater than 1 in 100,000 or a cumulative *non-carcinogenic hazard index* greater than 1 across all exposure pathways, in accordance with ADEC cumulative risk standards.

RAO 2: Prevent potential future degradation of groundwater by reducing concentrations of COCs in soil to levels protective of groundwater quality.

Based on the RAOs and *Applicable or Relevant and Appropriate Requirements* (ARARs), a number of technologies and approaches were identified and screened using criteria such as effectiveness for achieving the RAOs, implementability, and cost.

F.1 Preliminary Remediation Goals

The proposed soil CULs for Site SS025 are the lowest applicable levels for ADEC Table B1, Method Two CULs (under 40-inch zone) per 18 Alaska Administrative Code (AAC) 75.341. The Air Force may consider calculating alternative CULs using Method Three per 18 AAC 75.340(e) in the future and will follow the CECLA process to establish any change in the CULs. Migration to groundwater CULs that are protective of groundwater quality will be achieved at all depths. CULs for human health exposures (i.e., direct contact and outdoor inhalation) will be achieved up to a depth of 15 feet bgs and because the site is located within the dike, at any point (at any angle) 15 feet from the embankment slopes of the dike. The preliminary remediation goals for soil are chemical-specific ARARs for Site SS025.

There are no specific CULs proposed for soil vapor at Site SS025. The potential for future vapor intrusion will be reevaluated in accordance with ADEC's Vapor Intrusion Guidance for Contaminated Sites, or the most current applicable vapor intrusion guidance, upon attainment of the proposed soil CULs. Prior to achieving CULs, any potential vapor intrusion risk due to a change in site use will be evaluated in accordance with the LUC agreement between ADOT and the appropriate landowner.

After completing site cleanup, the risk from hazardous substances will be evaluated to ensure it does not exceed an excess cumulative carcinogenic risk standard of 1 in 100,000 or a cumulative non-carcinogenic hazard index of 1 across all exposure pathways per 18 AAC 75.325(g).

G. SUMMARY OF REMEDIAL ALTERNATIVES

In the Site SS025 FS, *general response actions* that could potentially be implemented to manage risks and treat contaminants at Site SS025 were identified. Specific response actions for each general response action were then identified and screened based on

their likely site-specific effectiveness, implementability, and relative cost. The site-specific response actions that were retained from this screening process were combined into four remedial alternatives. The preferred remedial alternative for Site SS025 is Alternative 3b. The remedial alternatives evaluated are described below:

Alternative 1 – No Action

Capital Cost:	*$0*
Operations and Maintenance	
(O&M) Cost:	*$0*
Total Present Value:	*$0*

Under CERCLA, evaluation of a no-action remedial alternative is required, pursuant to the NCP, 40 Code of Federal Regulations [CFR] 300.430(e)(6), to provide a baseline for comparison with other remedial alternatives. Under Alternative 1, No Action would be taken to address the impacted media identified at the site. With the No Action alternative, no formal programs would be put into place to control or monitor potential receptor exposures to site contaminants. Over time, the organic contaminants will attenuate naturally. Alternative 1 does not meet the RAOs and does not comply with the ARARs.

Alternative 2 – Land Use Controls

Capital Cost:	*$32,000*
O&M Cost:	*$1,082,000*
Total Present Value:	*$1,114,000*

Alternative 2 consists of the following actions:

- File a Notice of Environmental Contamination with the state recorder's office.
- Utilize administrative procedures and policies (LUCs) to control receptor exposure to contaminated media, where necessary until cleanup goals are achieved;
- Conduct annual inspections and complete inspection reports to document the continuing effectiveness of the LUCs.
- Conduct five-year reviews to evaluate the protectiveness of the remedy and modify if necessary.

Alternative 2 would require long-term maintenance of institutional controls that would be used to prevent uncontrolled exposure of potential receptors to contaminated soil. Controls/monitoring would be required if any excavation activities are performed that are unrelated to site restoration. In addition, land use would be restricted to preclude residential development. Any structures built at the site would have to be designed and constructed to mitigate vapor intrusion concerns.

Alternative 2 would require documentation of the LUCs, maintaining administrative controls through review of work clearance permits, periodic inspections of the site, and corrective action for LUC violations. LUCs would be maintained until cleanup goals are achieved. A time period of at least 100 years is anticipated for Alternative 2.

RAO 1 would be achieved immediately after development and implementation of the LUCs and would be achieved as long as LUCs were enforced. LUCs would not directly achieve RAO 2 (prevent potential future degradation of groundwater); however, no site-related COCs were identified in groundwater beneath Site SS025. It is assumed that RAO 2 will eventually be achieved through the natural attenuation of TCE from soil however, TCE is expected to be recalcitrant to natural degradation in soil, and therefore there is low expectation of achieving CULs through natural processes within a reasonable timeframe. LUCs will protect human receptors from exposure to COCs at concentrations that could pose a hazard. All RAOs would eventually be met but only over a long timeframe.

Alternative 3a – Soil Vapor Extraction and Land Use Controls

Capital Cost:	*$1,300,000*
O&M Cost:	*$2,700,000*
Total Present Value:	*$4,000,000*

Alternative 3a consists of the following actions:

- All components of Alternative 2.
- Apply SVE to remove VOCs in soil at concentrations greater than Migration to Groundwater CULs.

Alternative 3a would be used to remove CVOCs from soil at concentrations greater than the ADEC Method Two migration to groundwater CULs (40,000 square feet). With Alternative 3a temporary LUCs would be implemented and maintained during remediation until Cleanup Complete is achieved. A large SVE system would be installed in the source area to remove contaminants (VOCs) from the soil. The SVE system would consist of a blower that would be installed in a small shed at the site and electrical power would be provided via connection to a nearby transformer. The blower would be plumbed to a network of extraction wells installed in the area with VOCs in soil. Piping would be buried underground and heat traced to prevent freezing. Several vapor monitoring points also would be installed in order to measure the vacuum influence of the system at various locations at the site. The SVE system would require periodic maintenance and sampling to ensure it is operating properly.

The SVE technology targets VOCs such as TCE in unsaturated soil (i.e., above the water table). SVE works by creating a vacuum in the soil at the extraction well. As air moves through the contaminated soil to the extraction well, contamination is transferred from the soil to the extracted vapor. The extracted vapors would be discharged to the atmosphere. Discharge of vapors from the SVE system would be subject to federal regulations under 40 CFR 63.40-44 for the National Emissions Standards for Hazardous Air Pollutants.

With Alternative 3a, the SVE system is assumed to operate for 15 years. This alternative would achieve Cleanup Complete within 15 years. Once CULs are achieved LUCs would be removed.

RAO 1 would be achieved immediately after development and implementation of LUCs, and would continue to be met as long as LUCs were enforced. SVE would actively reduce concentrations of COCs in soil to meet RAO 2 (reduce COCs to levels protective of groundwater quality).

Alternative 3b – Soil Vapor Extraction and Land Use Controls

Capital Cost:	*$295,000*
O&M Cost:	*$1,405,000*
Total Present Value:	*$1,700,000*

Alternative 3b consists of the following actions:

- All components of Alternative 2.
- Apply SVE to remove VOCs in soil at concentrations greater than Human Health CULs.

Alternative 3b is similar to Alternative 3a because both alternatives utilize SVE, however, Alternative 3b will require installation of fewer SVE wells that would be operated over a shorter timeframe than Alternative 3a. Alternative 3b is intended to reduce the risks to human health within Site SS025 but will manage soil with COCs at concentrations greater than the ADEC Method Two migration to groundwater CULs using LUCs. With Alternative 3b, long-term management of LUCs would be required.

With Alternative 3b, the SVE system is assumed to operate for approximately five years. This alternative would achieve Cleanup Complete with LUCs within three to five years. A time period of 100 years is assumed for achieving Cleanup Complete. Once CULs are achieved LUCs would be removed. Because the site is a road and it is unlikely that soil from beneath the road will be moved to another location, and because groundwater beneath Site SS025 is not impacted by CVOCs, a longer time-frame for achieving SC is acceptable.

RAO 1 would be achieved immediately after development and implementation of LUCs, and would continue to be met as long as LUCs were enforced. RAO 2 will eventually be achieved through the natural attenuation of VOCs from soil. LUCs will protect human receptors from exposure to COCs at concentrations that could pose a hazard. All RAOs would eventually be met but only over a long timeframe.

Alternative 4 – Excavation and Disposal Outside of Galena and Land Use Controls

Capital Cost:	*$12,600,000*
O&M Cost:	*$2,700,000*
Total Present Value:	*$15,300,000*

Alternative 4 consists of the following actions:

- All components of Alternative 2.
- Cap and remove the active below-ground fuel pipeline within the excavation footprint.
- Excavate approximately 5,000 cubic yards of soil and transport it by barge and rail or truck to an appropriate disposal facility.
- Collect confirmation samples to verify that remaining soil meets Human Health CULs. Backfill the excavation with clean fill and reconstruct the dike road with clean fill material. Replace the removed section of the fuel pipeline.
- Install a SVE system similar to the system described for Alternative 3a to remove the COCs in the soil remaining after excavation.

Alternative 4 uses excavation to achieve the human health based cleanup levels in a shorter time frame than using SVE alone. For cost estimating purposes the 5,000 CY volume of soil estimated for excavation is based on a 200-foot long by 15-foot deep excavation. An average width of 45 feet (20-foot wide at road surface and 70-foot wide at bottom of the excavation) was assumed for estimating the volume of soil to be removed. SVE would be implemented to remove COCs in soil that are either not accessible to excavation or would be cost prohibitive to excavate because of the large volume of soil impacted (25,000 CY). The target treatment zone for SVE would range from approximately 25 to 39 feet bgs depending on the ground surface elevation.

Similar to Alternatives 2, 3a, and 3b, RAO 1 would be achieved once LUCs are in place. As with Alternative 3a, Alternative 4 would also would help to achieve RAO 2 by removing contaminant mass, although LUCs will be necessary to manage soil until the migration to groundwater CULs are achieved.

Five-Year Reviews would be required if soil containing COCs at concentrations greater than CULs remains on site. Once CULs are achieved LUCs would be removed.

H. EVALUATION OF ALTERNATIVES

During the detailed analysis phase, the remedial alternatives were evaluated with respect to seven of the nine evaluation criteria outlined by the NCP (40 CFR 300.430) and USEPA guidance for conducting FSs under CERCLA. These evaluation criteria are divided into three categories: *threshold criteria, primary balancing criteria, and modifying criteria*. Threshold criteria are those that must be met for an alternative to be viable for selection in the ROD. Primary balancing criteria form the basis for comparing alternatives for the site-specific conditions. Modifying criteria are addressed in the ROD after the RI, Supplemental RI, FS, and this PP have been completed, incorporating state and community feedback.

The nine evaluation criteria are categorized as follows:

Threshold Criteria

- Overall protection of human health and the environment
- Compliance with ARARs

Primary Balancing Criteria

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume (TMV) through treatment
- Short-term effectiveness
- Implementability
- Cost

Modifying Criteria

- State acceptance
- Community acceptance

Each of the remedial alternatives was evaluated against the criteria. The results are summarized in **Table 2** and explained in further detail in the following sections.

H.1 Threshold Criteria

The two threshold criteria (Overall Protection of Human Health and the Environment, and Compliance with ARARs) are used as pass/fail criteria to reflect the emphasis on these criteria over other evaluation criteria. Remedial alternatives that fail to meet the threshold criteria were removed from further evaluation and not evaluated with respect to the balancing criteria. **Table 2** summarizes the comparative analysis of the remedial alternatives for Site SS025, and includes both the threshold and balancing criteria.

H.1.1 Overall Protection of Human Health and the Environment

Overall protection of human health and the environment is measured by whether the RAOs are achieved. RAOs could not be achieved by Alternative 1, and therefore this alternative fails to meet this threshold criterion. Alternative 2 would protect human health through implementation of LUCs and would ultimately achieve RAOs 1 and 2 through natural attenuation processes, although CVOCs will take many years to attenuate. CVOC contamination is expected to be recalcitrant to degradation in soil, and therefore there is low expectation of achieving CULs through natural processes within a reasonable timeframe. Alternatives 3a, 3b, and 4 would achieve RAO 1 by using LUCs and would eventually achieve RAO 2 either though active remediation or natural attenuation.

H.1.2 Compliance with Applicable or Relevant and Appropriate Requirements

Except for Alternative 1, 'No Action', each alternative complies with ARARs. Detailed information on the ARARs can be found in the FS report for Site SS025.

H.2 Primary Balancing Criteria

A numerical ranking system was developed for comparison and ranking of the remedial alternatives that pass the threshold criteria. The five primary balancing criteria are weighted to provide a maximum possible 20 points each for a total possible score of 100 points. Modifying criteria (state and community acceptance) are not included in the ranking system, but will be considered in the selection of the final remedy in the ROD through the comments received on the PP. Ranking assignments were simplified to provide relative indications of low, moderate, or high conformance with the specified criteria. **Table 2** summarizes the comparative analysis of the remedial alternatives for Site SS025 and lists their numerical scores against the evaluation criteria.

H.2.1 Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence refers to expected residual risk and the ability of the remedial alternative to maintain reliable protection of human health and the environment over time. This criterion includes the consideration of residual risk that would remain following remediation (if any), and the adequacy and reliability of controls. Because Alternative 2 relies solely on natural processes to reduce TMV of contaminants at Site SS025 and does not utilize any treatment technologies, this alternative was scored "very low" (0). . Alternatives 3a and 4 actively remove COCs from soil to ultimately achieve Cleanup Complete, and therefore these alternatives were scored "high" (20). Alternative 3b was scored "moderate" because some contamination will be left

in place above the migration to groundwater CULs to naturally attenuate.

H.2.2 Reduction in Toxicity, Mobility, or Volume through Treatment

Reduction in TMV through treatment refers to the anticipated performance of the treatment technologies that may be included as part of the remedial alternative. Alternative 2 was scored "low" (6) because it uses administrative measures rather than active treatment, but may not achieve Cleanup Complete within a reasonable timeframe compared to active remediation because some contaminants resist natural degradation (e.g., TCE in aerobic environments).

Alternative 3 uses an engineered treatment technology (SVE) to reduce site-related COC concentrations in soil. Because this alternative actively treats COCs, Alternatives 3a and 3b were scored "high" (20). Alternative 4 would achieve cleanup to standards that are protective of human health. Alternative 4 was scored "moderate" (13) because a portion of the TCE-impacted soil would be moved to a landfill, rather than treated in place; however, this alternative does provide protection by reducing the on-site volume and mass of COCs in soil.

H.2.3 Short-Term Effectiveness

Short-term effectiveness addresses the time needed to implement the remedy, and any potentially adverse impacts to workers, the community, and the environment during construction and operation of the remedy. Alternative 2 does not include engineered cleanup, and therefore has no construction activity. Alternatives 3a and 3b have moderate construction activity associated SVE well installation, but considerably less construction activity than Alternative 4. Therefore, Alternative 2 was scored "high" (20) against this criterion. Alternatives 3a and 3b were scored "moderate" (13), and Alternative 4 was scored "low" (6), based on the greater risks to workers and the public associated with excavation activities.

H.2.4 Implementability

Implementability addresses the technical and administrative feasibility of a remedial alternative from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and need for coordination with other governmental entities are also considered. Alternative 2 only involves implementation and maintenance of LUCs. These activities are easily implemented and Alternative 2 was scored "high" (20) against this criterion. Alternative 3b requires LUCs and installation of a small SVE system which is also highly implementable and therefore also was scored "high" (20) against this criterion. Alternative 3a involves additional complexity associated with a large SVE system installation, O&M, and performance monitoring over a longer time period (compared to Alternative 3b). Although these activities are all readily implementable, Alternative 3a is significantly more complex than Alternative 3b and therefore Alternative 3a was scored "moderate" (13) against this criterion. Alternative 4 involves the complexity of Alternative 3a in addition to the logistical considerations associated with relocation of the subsurface fuel pipeline; excavation, transport, and disposal of impacted soil; and reconstruction of the dike road. These activities pose significantly more logistical and technical challenges than the other alternatives, so Alternative 4 was scored "low" (6) against this criterion.

H.2.5 Cost

The estimated total present value costs for the remedial alternatives that passed the threshold criteria are:

Remedial Alternative 2:	$1.1 M
Remedial Alternative 3a:	$4.0 M
Remedial Alternative 3b:	$1.7 M
Remedial Alternative 4:	$15.3 M

Based on relative cost Alternative 2 and 3b were scored "high" (20), Alternative 3a was scored "moderate" (13), and Alternative 4 was scored "low" (6). The total present value cost is based on a 1.40 percent discount rate. Cost estimates were developed following USEPA guidance and are considered accurate to within -30 percent to +50 percent of actual expected costs.

I. PREFERRED ALTERNATIVE

Table 2 shows the total scores assigned to the three alternatives evaluated for Site SS025. Alternative 2 received a total score of 66 points. Alternatives 3a and 3b received scores of 79 and 86 points, respectively. Alternative 4 received the lowest score

(51 points). Based on the results of the comparative analysis, Alternative 3b is the preferred alternative for Site SS025. Although Alternatives 3a and 4 will achieve Cleanup Complete more quickly than Alternative 3b, these alternatives cost approximately 2 and 8 times more than Alternative 3b, respectively. Because the site is a road and it is unlikely that soil from beneath the road will be moved to another location, and because groundwater beneath Site SS025 is not impacted by CVOCs, a longer time-frame for achieving SC is acceptable.

A pilot test SVE system was installed at Site SS025 in 2015 to evaluate the effectiveness of the SVE technology. The pilot test results indicate that SVE would be an effective treatment method for VOCs in

Table 2. Comparative Analysis of Remedial Alternatives for Site SS025

CRITERIA	Alternatives				
	1 No Action	2 LUCs	3a SVE (Large System) and LUCs	3b SVE (Small System) and LUCs	4 Excavation with Disposal outside of Galena, SVE, and LUCs
THRESHOLD CRITERIA					
Overall Protection of Human Health and the Environment	Fail	Pass	Pass	Pass	Pass
Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)	Fail	Pass	Pass	Pass	Pass
BALANCING CRITERIA[(1)]					
Long-Term Effectiveness and Permanence	N/A	6	20	13	20
Reduction of Toxicity, Mobility, or Volume Through Treatment	N/A	0	20	20	13
Short-Term Effectiveness	N/A	20	13	13	6
Implementability	N/A	20	13	20	6
Cost	N/A	20	13	20	6
MODIFYING CRITERIA					
State Acceptance	N/A	Neutral	Neutral	Accept	Neutral
Community Acceptance	N/A	TBD	TBD	TBD	TBD
Total Score	N/A	66	79	86	51

Notes: ISCO = in situ chemical oxidation, LUC = land use control, MNA = monitored natural attentuation, N/A = not applicable because alternative failed threshold criteria, SVE = soil vapor extraction, TBD = to be determined

1. Balancing Criteria Scores based on the following: Very Low = 0, Low = 6, Moderate = 13, High = 20. Scoring for Table 2 was updated in response to input from ADEC subsequent to the finalization of the Site SS025 FS report.

soil at Site SS025. The results of the pilot test system will be used in the remedial design to determine the location and number of additional vent wells needed.

Alternative 3b actively treats the TCE and other CVOCs in soil, and uses LTM of LUCs to manage soil left in place above the migration to groundwater CULs. Soil vapor would be monitored during remedy implementation to document reductions in COC concentrations and contaminant mass removal.

The proposed preferred alternative is based on current information and could change in response to public comments or new information.

RAO 1 (protection of human health) would be achieved immediately after development and implementation of the LUCs. LUCs would be implemented to manage soil left in place at concentrations greater than the ADEC Method Two migration to groundwater CULs. RAO 2 will be achieved once concentrations in soil are reduced via natural attenuation to levels protective of groundwater. Periodic soil sampling completed in coordination with CERCLA Five-Year reviews may be completed to track the progress of achieving the migration to groundwater CULs.

With Alternative 3b, Site SS025 is expected to reach "remedy in place" within one year of finalization of the ROD, and is expected to reach Cleanup Complete with LUCs within approximately five years of remedy construction. LTM of LUCs and Five-Year Reviews are assumed to be required for 100 years for the management of soil at concentrations greater than migration to groundwater cleanup levels. If alternative migration to groundwater CULs are developed under Method Three per 18 AAC 75.340(e), the time-frame for long-term LUCs may be reduced. Remediation and risk mitigation for petroleum contamination beneath Site SS025 will be addressed in the Cleanup Plan for Site CG001/CG002. LUCs associated with Site CG001/CG002 are anticipated to overlap Site SS025 and will mitigate unacceptable risks at Site SS025 from petroleum constituents in soil and groundwater.

Once CULs are achieved LUCs will be removed.

After completing site cleanup, the risk from hazardous substances will be evaluated to ensure it does not exceed a cumulative cancer risk of 1 in 100,000 or a cumulative non-cancer hazard index of 1 across all exposure pathways per 18 AAC 75.325(g). Alternative 3b is expected to meet ADEC CULs for the protection of human health within five years at an estimated total present value cost of $1.7M.

Based on information currently available, the Air Force believes the preferred remedial alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The Air Force expects the preferred remedial alternative to satisfy the statutory requirements of CERCLA § 121(b):

1) Be protective of human health and the environment;
2) Comply with ARARs;
3) Be cost-effective;
4) Utilize permanent solutions and alternative treatment technologies to the maximum extent practicable; and
5) Satisfy the preference for treatment as a principal element.

ADEC concurs that the alternative selected complies with state law and has approved the Site SS025 FS. ADEC can provide additional comments to the Air Force during the public comment period for this PP.

J. COMMUNITY PARTICIPATION

A public meeting will be held to allow the public the opportunity to review and provide comments on this PP. Details of the meeting are provided in the "Community Involvement Opportunities" text box, together with the location of the AR for the Former Galena FOL.

Relevant documents found in the AR include:

- Remedial Investigation Results Report for West Perimeter Road Trichloroethene (TCE) Spill Site (Site SS025), Former Galena Forward Operating Location, Alaska, Final (AR #458940).

- Human Health Risk Assessment for West Perimeter Road Trichloroethene (TCE) Spill Site (SS025), Former Galena Forward Operating Location, Alaska, Final (AR #458944).

- Supplemental Remedial Investigation Report for West Perimeter Road Trichloroethene (TCE) Spill Site (SS025), Former Galena Forward Operating Location, Alaska, Final (AR #539936).

- Feasibility Study Report for West Perimeter Road TCE Spill (Site SS025), Former Galena Forward Operating Location, Alaska, Final (AR #539937).

Acronyms and Abbreviations

1,1,2-TCA	1,1,2-trichloroethane
1,1,2,2-DCA	1,1,2,2-tretrachloroethane
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AFCEC	Air Force Civil Engineer Center
AR	administrative record
ARAR	Applicable or Relevant and Appropriate Requirements
Bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
cis-1,2-DCE	cis-1,2-dichloroethene
COC	constituent of concern
CUL	cleanup level
DoD	Department of Defense
DRO	diesel range organics
FOL	Forward Operating Location
FS	Feasibility Study
GRO	gasoline range organics
LUC	land use control
mg/kg	milligram(s) per kilogram
MGH	Million Gallon Hill
NCP	National Contingency Plan
O&M	operations and maintenance
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyls
PCE	Tetrachloroethene
PP	Proposed Plan
RAO	remedial action objective
RI	remedial investigation
ROD	Record of Decision
RRO	residual range organics
SVE	soil vapor extraction
SVOC	semi-volatile organic compound
TCE	trichloroethene
TMV	toxicity, mobility, or volume
trans-1,2-DCE	trans-1,2-dichloroethene
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

Glossary

Administrative Record (AR): A record maintained by the Air Force of all reports, studies, evaluations, records or other information relating to the environmental restoration program for a specific installation.

Alaska Department of Environmental Conservation (ADEC): The state agency responsible for protecting public health and the environment within the state. The Spill Prevention and Response Division is charged with protecting public health and the environment from sites contaminated by oil or other hazardous substances.

Applicable, relevant, or appropriate requirements (ARARs): State and federal laws and regulations that need to be met or considered in development and implementation of cleanup alternatives for a site. These include cleanup standards, standards of control, and other substantive environmental protection requirements, factors, or limitations under state and federal law.

Base Closure and Realignment Act: The federal law that provides the authority, process, and schedule for closing an operating DoD facility.

Carcinogenic Risk: Cancer risk is assessed by examining the likelihood of cancer resulting from exposure to contaminants at a site. Cancer risk is expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to carcinogens. For example, a 1 in 100,000 risk (usually written as "1×10^{-5}") means for every 100,000 people (receptors) exposed to site contaminants, one extra case of cancer may occur than normally would be expected from all other causes in the area. ADEC has established a target cumulative cancer risk standard of 1 in 100,000 ($1x10^{-5}$) per 18 Alaska Administrative Code (AAC) 75.325(g).

Cleanup: Efforts to mitigate environmental damages or threats to human health, safety, or welfare from hazardous substances or oil. It may include removal of hazardous substances from the environment, including restoration, remediation, and other measures that are necessary to mitigate or avoid further threat to public health, safety and welfare, or the environment. Cleanup is often used interchangeably with terms like corrective action, remedial action, removal action, or response action. It is often used broadly to describe various actions or phases of an action, such as the RI/FS in the CERCLA process.

Cleanup Complete: A determination made by ADEC for a contaminated site when efforts to reduce hazardous substance contamination have either achieved the strictest levels established in state regulation, or the possibility of human exposure to any residual contamination is highly unlikely. When "cleanup complete" is achieved, land use and/or activity controls to protect human health and the environment from future exposure are not required.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA): Commonly known as the Superfund law, CERCLA is a federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act. The USEPA is responsible for implementing these laws. Under the program, USEPA can either:

1) Pay for the site cleanup when parties responsible for the contamination cannot be located or are unwilling or unable to perform the work, and/or 2) take legal action to force parties responsible for site contamination to clean up the site or pay back the federal government for the cost of the cleanup.

Current and future Occupational Worker: This receptor is a standard industrial worker who works at the same location for multiple years and whose work involves incidental contact with soil, either indoors (as dust) or outdoors. This worker is not involved in excavation work, but work activities may include outdoor maintenance activities such as light landscaping. Future occupational workers may be exposed to constituents in soil to 2 feet bgs by incidental ingestion, dermal contact, and inhalation of ambient dust and vapors in ambient air; and inhalation of vapors migrating from subsurface soil and groundwater to indoor air. Potential exposure to constituents in groundwater may occur by ingestion as drinking water. Dermal contact with groundwater is not anticipated for the occupational worker. Additionally, dermal contact with, incidental ingestion of, and inhalation of ambient dust from subsurface soil (below 2 feet bgs) is not anticipated for the occupational worker.

Diesel Range Organics (DRO): Consists of compounds that generally represent the diesel fuel range of petroleum hydrocarbons.

Defense Environmental Restoration Program: A program establishing authorities and responsibilities for conducting environmental restoration activities at facilities under DoD jurisdiction. This law establishes DoD and Component Environmental Restoration Accounts (ERAs) to fund Defense Environmental Restoration Program activities (10 USC § 2701 et seq.). The Air Force conducts its Defense Environmental Restoration Program activities as the Environmental Restoration Program.

Feasibility Study (FS): A CERCLA document which analyzes potential remediation methods based on human health and ecological risk assessment results. The FS emphasizes RAOs and evaluates the relative advantages and disadvantages of selected potential remedial alternatives at contaminated sites.

Gasoline Range Organics (GRO): Consists of compounds that generally represent the gasoline range of petroleum hydrocarbons.

General Response Action: a broadly defined group, class, or type of action that could possibly be used to achieve the RAOs.

Groundwater: Water found beneath the earth's surface that fills pores between soil particles (e.g., sand, gravel, silt) creating a saturated zone. In aquifers, groundwater is present in sufficient quantities that it can be used for drinking water, irrigation, or other purposes.

Human Health Risk Assessment: An estimate of the potential harmful effects humans may experience as a result of exposure to chemicals in contaminated soil or groundwater.

Hypothetical Future Resident: The on-site resident receptor is evaluated to address unrestricted land use, even where future residential land use is unlikely. This receptor is a standard child/adult resident who lives at the same location for multiple years and whose activities involve contact with soil and groundwater. Hypothetical long-term future residents may be exposed to constituents in soil to 15 feet bgs by incidental ingestion, dermal contact, and inhalation of ambient dust and vapors in ambient air; and inhalation of vapors migrating from subsurface soil and groundwater to indoor air. Hypothetical near-term future residents may be exposed to constituents in soil to 2 feet bgs by incidental ingestion, dermal contact, and inhalation of ambient dust and vapors in ambient air; and inhalation of vapors migrating from subsurface soil and groundwater to indoor air. Potential exposure to groundwater may occur by ingestion as drinking water and dermal contact. The long-term future resident scenario addresses residential development following deep excavation and redistribution of soil. The near-term future resident scenario addresses residential development without deep excavation; therefore, dermal contact with, incidental ingestion of, and inhalation of ambient dust from subsurface soil is not anticipated for near-term residents.

Future Resident: The on-site resident receptor is evaluated to address unrestricted land use, even where future residential land use is unlikely. This receptor is a standard child/adult resident who lives at the same location for multiple years and whose activities involve contact with soil and groundwater. Hypothetical future residents may be exposed to constituents in soil by incidental ingestion, dermal contact, and inhalation of ambient dust and vapors in ambient air; and inhalation of vapors migrating from subsurface soil and groundwater to indoor air. Potential exposure to groundwater may occur by ingestion as drinking water and dermal contact.

Modifying Criteria: Modifying criteria for remedial alternatives, which includes state acceptance and community acceptance, may be considered to the extent that information is available during the FS, but can be fully considered only after public comment on the PP is received. In the final balancing of trade-offs between alternatives upon which the final remedy selection is based, modifying criteria are of equal importance to the balancing criteria.

National Contingency Plan (NCP): The National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300), more commonly called the NCP, is the federal government's plan for responding to both oil spills and releases of hazardous substances (actual and potential). The NCP is at the heart of the National Response System, under which federal departments and agencies help state and local officials protect public health and the environment during hazardous materials emergencies, including emergency removal actions at hazardous waste sites.

Non- Carcinogenic Hazard Index: The measure used to describe the potential for non-cancer health effects to occur in an individual is expressed as a "*hazard index*". The hazard index is a comparison of the estimated exposure level (considering all contaminants present at the site and all potential pathways of exposure) to an exposure level that is considered to be without an appreciable risk of adverse effects (a "safe" level). If the hazard index (the ratio of the estimated exposure level to the "safe" exposure level) is less than 1, there is low potential for adverse human health effects resulting from exposure to contaminants at the site.

Primary Balancing Criteria: Criteria used to weigh major trade-offs among remedial alternatives. The five criteria are long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost.

Principal Threat Waste: Principal threat wastes are those source materials considered to be highly toxic or highly mobile which generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur.

Proposed Plan: This document summarizes for the public the preferred cleanup strategy, rationale for the preference, and alternatives presented in the

detailed analysis of the RI/FS. It must actively solicit public review and comment on all the alternatives under consideration.

Public Comment Period: A time period for the public to review and submit comment on various documents and actions. A comment period cannot be less than 30 days and upon timely request to the lead agency, the comment period will be extended by a minimum of 30 additional days.

Receptor: The organism(s) or ecological resource(s) of interest that might be adversely affected by contact or exposure to a stressor. "Stressor" means any physical, chemical or biological entity that can induce an adverse effect.

Record of Decision (ROD): A document that explains which cleanup alternative(s) will be used at a site or that justifies no further action. The ROD is based on information and technical analysis generated during the RI/FS and consideration of public comments and community concerns.

Remedial Action: The actual construction or implementation of the selected cleanup plan.

Remedial Action Objectives (RAOs): The specific goals for protecting human health and the environment. RAOs are developed by evaluating the ARARs that are protective of human health and the environment and results of the RIs, including the human and ecological risk assessments. RAOs provide a general description of what the cleanup will accomplish.

Remedial Alternatives: General response actions that have the potential to meet the RAOs for a specific site.

Remedial Design: The phase of the project where engineering plans, technical drawings, and specifications are developed for the selected cleanup plan.

Remedial Investigation (RI): A CERCLA process to determine the nature and extent of the contamination resulting from the release of a hazardous substance. The RI emphasizes characterization and associated data collection at hazardous waste sites.

Residual Range Organics (RRO): Consists of compounds that contain heavy fuel products such as Bunker C fuel or asphalt.

Soil Vapor Extraction (SVE): A treatment technique that removes volatile contaminants from subsurface soils by removing air from the soils through special vacuum extraction wells.

Source Area: Area where contamination originated or was released at the site, including soil that is contaminated as a result of contaminant migration. Source areas are typically located in unsaturated or variably saturated soil above the groundwater surface. ADEC regulatory guidance also considers a source area to include all areas of the site impacted with contamination above cleanup levels, including groundwater extent.

Threshold Criteria: Requirements that each remedial alternative must meet in order to be eligible for selection. They include overall protection of human health and the environment and compliance with ARARs.

Vapor Intrusion: The migration of released volatile chemicals from the subsurface into overlying buildings.

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The Air Force encourages the public to comment on the remedial alternatives described in this Proposed Plan. Comments may be provided in writing or verbally at the community meeting to be held on October 26, 2016, at 7:00 p.m. at the Larsen Charlie Community Hall, Galena, Alaska. Written comments may be submitted using the comment form below. If additional space is needed, comments may be written neatly on plain white paper.

In addition, the Air Force welcomes written comments submitted directly to our office. Comments may be submitted to:

Mr. AL Weilbacher
2261 Hughes Ave. Ste 155
JBSA Lackland, TX 78236-9853
(210) 395-9421

Or via E-mail at adolph.weilbacher@us.af.mil

General Questions/Comments may also be referred to the Air Force Public Affairs team at (866) 725-7617 or afcec.pa@us.af.mil.

After the comment period closes on November 28, 2016, the Air Force will respond to all comments, which will be included in the responsiveness summary of the ROD.

Please complete the following information and mail to the address above or copy into an email to Mr. Weilbacher.

Name: _____
Address: _____
_____
Phone: _____
E-mail: _____

- ☐ I support the Air Force's preferred alternative
- ☐ I do not support the Air Force's preferred alternative

Additional Comments:

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