Record of Decision for Cleanup
Defense Fuel Support Point-Anchorage
U.S. Defense Energy Support Center
ADEC Database Record Key 1988-21-X1-119-01

INTRODUCTION

The Alaska Department of Environmental Conservation (ADEC), in cooperation with Defense Energy Support Center (DESC), has developed this Record of Decision (ROD), which presents the selected remedy and supporting rationale for cleanup at the former Defense Fuel Support Point-Anchorage (DFSP-A) bulk fuel terminal in Anchorage, Alaska

The ROD was developed in accordance with State of Alaska regulations governing the protection of human health and the environment from hazardous substances (18 Alaska Administrative Code (AAC) Part 75, Article 3 "Discharge Reporting, Cleanup, and Disposal of Oil and Other Hazardous Substances"). The alternatives evaluated for DFSP-A were developed based on environmental and engineering studies, experience gained from previous removal actions at the site, and an understanding of the needs of the community as expressed at the DFSP-A Restoration Advisory Board (RAB). The public has been informed of the preferred alternative and had the opportunity to express their opinions or provide suggestions as to how best to implement the cleanup. No objections to the selected remedy and cleanup levels have been raised by the public in meetings or during the comment period for the Proposed Plan.

SITE INFORMATION

DFSP-A is located at 1217 Port Road, at the Port of Anchorage in Anchorage, Alaska. DFSP-A is located in the North 1/2 and Southwest 1/4 of Section 7, Township 13 North, Range 3 West, Anchorage (A-8) NW Quadrangle, Seward Meridian and within the Municipality of Anchorage (MOA) Grids 1030, 1031, and 1130. The DFSP-A property encompasses approximately 69 acres and is bordered by Elmendorf Air Force Base to the north and east, Alascom, Inc. to the southeast, Bluff Road and the Government Hill residential community to the south, Chevron

USA Products Company (Chevron) to the southwest, and Terminal Road, Signature Flight Support's Anchorage Fuel Supply Center (Signature), and Tesoro Alaska Petroleum Company (Tesoro) to the west and northwest. As with DFSP-A, Chevron, Signature, and Tesoro are bulk fuel storage and distributing facilities.

The DFSP-A property is withdrawn public land, by Public Order, managed by the U.S. Bureau of Land Management (BLM) and is assigned to the U.S. Army 6th Infantry Division. The facility was operated and maintained by the U.S. Army until October 1989, when Defense Energy Support Center (DESC) took over operational responsibilities as a tenant on the property. DFSP-A operated as a bulk fuel storage and distributing facility from 1942 until closure in October 1996. A total of 27 releases of arctic grade diesel fuel, number four aviation turbine fuel (JP-4), number five aviation turbine fuel (JP-5), unleaded regular gasoline (MUR), slop fuel, and transformer fluid were documented at DFSP-A between 1960 and 1989. In addition, several releases of fuel were documented at the Tesoro, Texaco, and Chevron facilities that may have impacted the former truck/rail car loading rack area within DFSP-A.

Based primarily on topography, which is a key factor influencing potential future land use, the DFSP-A site is subdivided into three functional areas: the Upper Bluff Area (UBA), the Former Tidal Flats Area (FTFA), and the Slope Deposits Area (SDA). A site map depicting the functional areas overlaid on the dominant site features (i.e., former buildings and fuel storage tanks) is attached as Figure 1. The DFSP-A functional areas are described below.

UBA: The UBA occupies the generally flat-lying ground at the higher elevations of the site. In the ROD, the forested northeastern portion of the site is included with the UBA although its topography differs from the remainder of the UBA. This is because the forest is potentially suitable to recreators. There are currently no structures in this area. Two 2.1 million gallon fuel tanks (Tanks 20-616 and 20-617) and three large buildings have been removed from the UBA.

FTFA: The FTFA occupies the generally flat-lying ground at the lower elevations of the site. The FTFA is in proximity to the surrounding Chevron, Tesoro, and Signature bulk fuel terminals. There are currently no structures in this area. A railcar loading rack, a truck loading rack, and an operations building have been removed from the FTFA.

SDA: Excluding the forest, the SDA includes the remainder of the DFSP-A property that is best described as sloping topography situated between the UBA and FTFA. There are currently no structures in this area. Numerous fuel storage tanks, including two 2.1million gallon tanks (20-618 and 20-619), four 546,000 gallon tanks (20-621, 20-622, 20-623, and 20-624), and ten aboveground storage tanks), a fuel transfer pumphouse (Building 20-517), a waste collection area, a drum dump area, a tank cleaning sludge dump area, and a hazardous materials storage area have been removed from the SDA.

Soils at DFSP-A typically consist of gravelly sand overlying clay. The gravelly sand, which is exposed over most of the site surface, is a relatively pours soil that was deposited as part of the

Naptowne Outwash Formation. The Bootlegger Cove Formation clay is encountered beneath the outwash in borings and excavations that penetrate through the gravelly sand. The clay formation is a relatively impervious soil that forms a competent confining layer beneath the DFSP-A site. The Bootlegger Cove Formation is encountered as deep as 35 feet below ground surface (bgs) on the UBA, as shallow as 10 feet bgs on the FTFA, and near the surface north of former Tank 20-618. Groundwater at the site occurs primarily in two zones: a deep confined aquifer below the Bootlegger Cove Formation and a near-surface unconfined zone perched above the Bootlegger Cove Formation clay. The deeper confined aquifer is artesian and not in direct communication with the shallow perched water. The movement of perched water generally mimics the surface topography and migration is towards surface drainages that typically discharge into Knik Arm as shown on Figures 1. At DPSP-A, perched water underlies about two-thirds of the site, with greatest saturated thickness (up to 31 feet) along the eastern portion of the facility.

The shallow perched water is not suitable as drinking water. The perched water is not currently used for private/public drinking or domestic purposes. The perched water is not within a recharge area for a private/public drinking water well, a well protection area, or a sole source aquifer. The perched water on the FTFA is brackish and unfit for human consumption. The perched water was determined not suitable for drinking water by the ADEC in a letter from Ms. Eileen Olson on April 21, 1994. Two former buildings on-site, Building 20-504 on the UBA and Building 20-516 on the FTFA, were connected to Anchorage Water and Wastewater Utility (AWWU) services until April 2000. AWWU services are still available on-site and in the site area at a relatively low cost. The existing land use is industrial and the surrounding fuel storage tanks and facilities down-gradient of the site are in industrial/commercial use.

IDENTIFICATION OF CONTAMINANTS OF CONCERN

DESC has studied the subject DFSP-A site to identify the contaminants of concern at each suspected area. Through various projects a large number of soil and water samples have been collected and analyzed at chemical laboratories to accomplish this objective. Soil samples have been collected from various depths to characterize the surface and subsurface soil [Michael L. Foster & Associates (MLFA), 2001b; Shannon & Wilson (S&W), 1996; S&W, 1997; S&W, 1998a; S&W, 1998b; S&W, 1999c]. Surface water samples were collected from drainage channels to characterize surface water flowing onto or away from the site, while groundwater samples were repeatedly collected from monitoring wells to characterize perched water beneath the site (MLFA, 2000a; MLFA, 2000c; MLFA, 2001a; MLFA, 2001c; S&W, 1997; S&W, 1999a; S&W, 1999b; S&W, 1999d; S&W, 2000).

Soil samples contained contaminants typically found in fuels. Diesel range organics (DRO), gasoline range organics (GRO), and benzene, toluene, ethylbenzene, and xylenes (BTEX) were identified as the potential contaminants of concern in subsurface soil.

Surface water and groundwater samples contained fuel related chemicals. DRO, GRO, and BTEX were identified as the potential contaminants of concern in surface and groundwater.

EXTENT OF CONTAMINATION

The site characterization results indicated that GRO and DRO concentrations in the soil exceed Method One Category C cleanup levels and BTEX concentrations exceed Method Two Table B1 cleanup levels (18 AAC 75). The majority of fuel contamination is in subsurface soil within a "smear zone" located between 5 and 25 feet bgs in the SDA and between the surface to 5 feet bgs in the FTFA (S&W, 1997).

Leaching of the GRO, DRO, and benzene in the smear zone impacts groundwater quality in the shallow perched water zone. Water samples collected down-gradient from former tank locations and known release areas in the SDA and FTFA have indicated GRO, DRO, and benzene concentration that exceed cleanup levels. The monitoring well locations are shown on Figure 1.

SUMMARY OF SITE RISKS

A risk assessment was conducted to determine whether chemicals remaining in the environment from past operations at DFSP-A pose an unacceptable risk to human health and the environment. Risks to workers, recreationalists, teachers/students, and ecological receptors were evaluated as well as on-site birds, mammals, terrestrial plants, soil invertebrates, and freshwater aquatic and benthic organisms. In addition, potential risks to freshwater and marine aquatic and benthic organisms were considered because of the potential for off-site discharge of chemicals from site drainages.

No unacceptable risks to workers, general recreationalists, or ecological receptors were predicted for the UBA. Otherwise, unacceptable human health risks were limited to potential noncarcinogenic risks predicted for the site worker in the SDA, which are largely related to dermal exposure to DRO in perched water. Possible or probable unacceptable ecological risks were predicted for all lower trophic level ecological communities evaluated outside of the UBA, including off-site freshwater and marine aquatic and benthic ecological receptors, as a result of off-site contaminant discharge from the two site drainages (S&W, 1999e).

CLEANUP LEVELS

The soil cleanup levels for the site, as shown in Table 1, are based on values in Method Two Table B1 Under 40 inch Zone-Migration to Groundwater and Table B2 Maximum Allowable Concentrations (MAC) of 18 AAC 75. The Low-Level Goal as explained in the Cleanup Alternatives section below is based on Method One Category C. The groundwater cleanup levels are based on ten times the values in Table C since the groundwater is not used for drinking water as discussed in a previous section.

Table 1 – Soil and Groundwater Cleanup Levels

Contaminant	MAC Values for Soil (mg/kg)	Low-Level Goal for Soil (mg/kg)	Groundwater (mg/L)
Gasoline Range Organics	1,400	500	13
Diesel Range Organics	12,500	1,000	15
Benzene	0.02	0.02	0.05
Ethylbenzene	5.5	5.5	7
Toluene	5.4	5.4	10
Xylene	78	78	100

MAC = Maximum Allowable Concentrations
mg/kg = milligrams per kilogram
mg/L = milligrams per liter

The surface water cleanup levels for the site, as shown in Table 2, are based on total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAqH) values in the Water Quality Standards Table of 18 AAC 70.

Table 2 – Surface Water Cleanup Levels

Contaminant	Surface Water (mg/L)
TAH	0.010
TaqH	0.015

TAH = the monoaromatic hydrocarbons (BTEX).
TAqH = the sum of BTEX and PAH.

POINTS OF COMPLIANCE

Soil: A point of compliance for soil is an area where soil cleanup levels must be attained. The points of compliance for soil include the surface and subsurface soil in the vadoze zone across the entire site. "Vadose zone" is defined at 18 AAC 78.995.

Groundwater and Surface Water: A point of compliance for groundwater and surface water is an area where groundwater cleanup levels must be attained. Alternative points for compliance (APOC) for groundwater and surface water were identified in accordance with 18 AAC 75.345(e). Three areas of APOC will be monitored for compliance with the groundwater and surface water cleanup levels, as shown in Table 3. ADEC reserves the right to request additional monitoring points, increase/decrease in monitoring frequencies or additional remedial action.

Table 3 – Groundwater and Surface Water Alternative Points of Compliance

APOC Area	Monitoring Well and Surface Sample Location
UBA	MW12, MW13, MW16, MW21, SS2, SS3, SS4
SDA	MW4, MW5, MW7, MW14, MW22, MW25, MW501, MW503
FTFA	MW1, MW2, MW2A, MW15, MW23, SS12, SS14

MW11 = Monitoring Well 11
SS2 = Surface Sample 2

UBA points of compliance are wells and surface sample locations on the Upper Bluff Area of the site, up-gradient of the existing contamination, at a location to monitor groundwater entering the site, or in the forest north of the fence. MW16 is off-site and may be affected by activities off-site.

SDA points of compliance are wells located on the Slope Deposit Area of the property. These wells will be monitoring the progress of natural attenuation process, to confirm that the plumes' concentrations are stable or decreasing and to determine when cleanup levels are reached.

FTFA points of compliance are wells and surface sample locations on the Former Tidal Flats Area of the property. These wells will be monitoring the progress of natural attenuation process, to confirm that the plume concentrations are stable or decreasing and to determine when cleanup levels are reached. FTFA wells may also be affected by activities off-site.

COMPARATIVE ANALYSIS OF CLEANUP ALTERNATIVES

A number of potential cleanup alternatives were evaluated for the three functional areas (UBA, SDA, and FTFA). These cleanup alternatives are summarized in Table 4 and in the following paragraphs. A detailed discussion of each alternative is presented in the Proposed Plan for Remedial Action (MLFA, 2000b).

Table 4 – Cleanup Alternatives Evaluated for Soil and Water

Impacted Medium	Cleanup Alternatives
Soil	
	Soil Alternative 1 - No Action
	Soil Alternative 2 - Intrinsic Remediation and Institutional Controls
	Soil Alternative 3a - Excavation to MAC Values, Treatment, Backfilling, and Institutional Controls
	Soil Alternative 3b - Excavation to Low-Level Goal, Treatment, Backfilling, and Institutional Controls

	Soil Alternative 4 - Bioventing or Soil Vapor Extraction to MAC Values and Institutional Controls
Groundwater	
	Groundwater Alternative 1 - No Action
	Groundwater Alternative 2 – Water Quality Monitoring and Free Phase Product Removal
	Groundwater Alternative 3 - Water Quality Monitoring, Air Sparging to ARARs(1), and Free Phase Product Removal
	Groundwater Alternative 4 - Water Quality Monitoring, Groundwater Extraction and Treatment to ARARs, and Free Phase Product Removal
Surface Water	
	Surface Water Alternative 1 - No Action
	Surface Water Alternative 2 – Water Quality Monitoring and Institutional Controls
	Surface Water Alternative 3 – Surface Water Treatment and Institutional Controls

[1] Primary applicable or relevant and appropriate requirement (ARAR) for DFSP-A groundwater (non-potable) is derived from ten times Table C from 18 AAC 75.

CLEANUP ALTERNATIVES FOR SOIL

The soil cleanup alternatives include three basic approaches with corresponding variations in time to achieve cleanup objectives. The longest timeline is associated with no action or intrinsic bioattenuation (Soil Alternatives 1 and 2). Soil Alternatives 3 and 4 are designed to achieve the soil cleanup criteria through excavation and bioventing/soil vapor extraction, respectively. Soil Alternatives 3 and 4 rely on intrinsic bioattenuation to address residual contamination after MAC values are achieved. DESC also chose to consider a more aggressive soil cleanup (Soil Alternative 3b) to achieve the shortest timeline practicable. The soil alternatives and estimated timelines are addressed in greater detail below.

Soil Alternative 1 - No Action: The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulations require that the no action alternative be considered when selecting an appropriate cleanup action. This provides a basis of comparison with other considered alternatives. Preliminary modeling results suggest that site contaminant concentrations would likely exceed criteria for in excess of 100 years if no active remediation were conducted.

Soil Alternative 2 - Intrinsic Remediation and Institutional Controls: The characterization and feasibility studies conducted at the site have shown that natural biological, chemical, and physical processes will reduce the levels of contaminants in the soil. The combination of these processes is called Intrinsic Remediation. Restrictions such as conditional land use through deed restrictions or other means, fencing the subject areas, or posting warning signs are called Institutional Controls and would be included as part of this alternative. Because no action is taken to reduce contaminant mass at the site, the timeline for remediation of soil is likely in excess of 100 years.

Soil Alternative 3a - Excavation to MAC Values, Treatment, Backfilling, and Institutional Controls: In this alternative, the goal is to excavate and treat soil with contaminant concentrations exceeding the MAC values, summarized in Table 1. Following the soil treatment, the contaminant free soil (or imported clean soil) can be used to backfill site excavations and regrade the site as appropriate. This alternative would also include the land use restrictions described in Soil Alternative 2. Contaminant fate and transport modeling suggest that the timeline for intrinsic remediation to reduce site contaminant loading to the point at which leachate should no longer exceed criteria in groundwater or surface water is approximately 70 years. It is assumed that approximately five additional years would be needed to flush the remaining contaminants out of the site groundwater and surface water and collect two years data showing these media are below criteria before site closure is approved by ADEC.

Soil Alternative 3b - Excavation to low-level goal, Treatment, Backfilling, and Institutional Controls: This alternative is the same as Soil Alternative 3a except for the amount of soil to be excavated and treated. Additional soil would be excavated and remediated to reduce the soil contaminant concentrations to a low-level goal, 18 AAC 75 Method One Category C at which the remaining contaminant mass would likely be insufficient to cause groundwater or surface water contaminant concentrations to exceed criteria. Reduction of the contaminant concentrations in soil would shorten the time required to cleanup the surface water and groundwater at the site. As in Soil Alternative 3a, the remediated soil or imported clean soil would be used as backfill for site restoration and short-term land use restrictions may be needed until ADEC approves site closure. Assuming one year for excavation completed, two years to flush contaminants from the site groundwater, and a two-year monitoring period to show the site to be clean, the timeline to site closure is estimated to be five years.

Soil Alternative 4 - Bioventing or Soil Vapor Extraction to MAC Values and Institutional Controls: Soil Alternative 4 consists of in situ remediation of impacted soil by bioventing or soil vapor extraction and institutional controls to prevent inappropriate exposure of humans to site contaminants. Feasibility testing at DFSP-A has shown that the bioventing and soil vapor extraction technologies are viable alternatives for enhancing in situ bioremediation of petroleum hydrocarbon impacted soils.

Bioventing is the process of aerating the subsurface soil to stimulate in situ biological activity and enhance bioremediation. To implement bioventing, atmospheric air is blown into the subsurface soil through a series of wells and/or horizontal piping. Naturally occurring bacteria already present in the site's subsurface soil consume the petroleum hydrocarbons (the contaminants) as a source of food. Enhancing the oxygen content in the unsaturated soil column allows these bacteria to significantly increase the rate at which they consume the contaminants, thereby reducing the time for cleanup as compared to passive intrinsic bioremediation.

Soil vapor extraction incorporates a system designed to remove volatile hydrocarbons from the subsurface soil by vacuum applied at the specially designed and installed wells. Volatiles from soil vapor extraction can be concentrated and discharged at a single point, the discharge stack, and treated if necessary based on contaminant concentrations. As with bioventing, vapor extraction would continue until soil contaminant concentrations are reduced to MAC values. It is estimated that this could be accomplished in about five years. Soil vapor extraction must be installed in the unsaturated soil (vadose zone) if the groundwater is being remediated using air sparging.

During and after the bioventing or soil vapor extraction treatment, this alternative would also include the Institutional Controls. The timeline to reduce soil contaminant concentrations to achieve groundwater and surface water criteria would require approximately 70 years following source reduction to MAC values. Approximately 5 additional years follow for site flushing and 5 years for monitoring to document that groundwater and surface water are clean. Therefore the timeline for Alternative 4 is estimated to be about 80 years.

CLEANUP ALTERNATIVES FOR GROUNDWATER

The groundwater cleanup alternatives likewise include four basic approaches; No Action, monitoring without remediating groundwater contamination, or monitoring while performing active remediation using air sparging or pump-and-treat systems. It is assumed that a groundwater remediation system, once started, continues for the life of the corresponding soil alternative used to address contamination in the site soil. It is also assumed that free-product removal will be necessary if a petroleum hydrocarbon is found. Beyond these assumptions, the groundwater alternatives are addressed in greater detail below.

Groundwater Alternative 1 - No Action: As with soil and surface water, the no action alternative must be considered as a basis of comparison with other cleanup alternatives. No monitoring is included in the no action alternative.

Groundwater Alternative 2 - Water Quality Monitoring and Free Phase Product Removal: This alternative includes sampling and analysis of groundwater. Sampling results would be used to monitor contaminant concentrations in the groundwater to evaluate the potential dispersion of the DFSP-A contaminant plume(s).

Groundwater Alternative 3 - Water Quality Monitoring, Air Sparging to ARARs, and Free Phase Product Removal: This method, typically designed in conjunction with Soil Vapor Extraction as described in Soil Alternative 4, involves injection of air into the saturated zone below the groundwater table to volatilize hydrocarbon constituents dissolved in the groundwater and absorbed to the soil. Air injection also increases groundwater dissolved oxygen levels, which enhances biodegradation. The air is typically injected through a system of blowers feeding air to vertical air injection wells. Once the groundwater contaminant concentrations are reduced below ARARs, the air sparging process could be discontinued, although it has been assumed this would not occur until source area soil contaminants were depleted. Water Quality Monitoring would be performed in this alternative.

Groundwater Alternative 4 - Water Quality Monitoring, Groundwater Extraction and Treatment to Applicable ARARs, and Free Phase Product Removal: This alternative consists of extraction and treatment of groundwater containing contaminants in excess of ARARs. To accomplish this, a series of water pumping wells or groundwater collection galleries would be installed and groundwater would be pumped to treatment systems in environmental sheds. The treated water would then be pumped back into infiltration galleries to leach back into the groundwater aquifer or the treated water could be discharged into the city sewer upon approval. The objective of this groundwater treatment method is to reduce the groundwater contaminant concentrations to below ARARs after which the Groundwater Extraction and Treatment process could discontinue, although it has been assumed this would not occur until source area soil contaminants were depleted. Groundwater Quality Monitoring would also be performed as part of this alternative.

CLEANUP ALTERNATIVES FOR SURFACE WATER

The surface water cleanup alternatives are limited to two basic approaches: no action and active remediation using a pump-and-treat system. It is assumed that a surface water remediation system, once started, continues alongside the corresponding soil alternative used to address contamination in the site soil. Beyond this assumption, the surface water alternatives are addressed in greater detail below.

Surface Water Alternative 1 - No Action: As with soil and groundwater, the no action alternative must be considered as a basis of comparison with other cleanup alternatives.

Surface Water Alternative 2 – Water Quality Monitoring and Institutional Controls: This alternative includes sampling and analysis of surface water. Sampling results would be analyzed to evaluate whether contaminant concentration exceed ARARs in surface waters at the DFSP-A boundaries. This alternative would also include institutional controls.

Surface Water Alternative 3 – Surface Water Treatment and Institutional Controls: This alternative addresses the quality of surface water near the compliance points where the water discharges off the DFSP-A site into MOA storm drains. In general, the surface waters are channeled in shallow ditches. Weirs would be constructed across the ditches and slightly upstream from the compliance points at surface locations SS4 to the north and SS14 to the west. A sump would be located on the upstream side of the weir and the quality of surface water reaching the sump would be monitored three times per year. If contaminants were above surface water ARARs, the water would be pumped through a treatment system to remove the contaminants before discharging to the downstream side of the weir. Institutional controls may be needed.

EVALUATION OF CLEANUP ALTERNATIVES

The site cleanup alternatives were evaluated by comparing them to the five ADEC criteria listed in the following sections.

Protectiveness: How well does each alternative protect human health, safety, and welfare or the environment, both during and after the cleanup action?

Intrinsic Remediation is protective of human health but potential environmental risks would persist until cleanup is completed, which is estimated to require in excess of 100 years. Excavation to MAC Values is protective of human health, but environmental risks persist during cleanup, which is estimated to require 75 years. Bioventing/Soil Vapor Extraction to MAC Values is protective of human health, but potential environmental risks persist until cleanup is completed, which is estimated to require 80 years. When Air Sparging, Groundwater Extraction and Treatment, or Surface Water Treatment is included, the off-site environment is also protected during the remediation period. Excavation to Low-Level Goal aggressively decreases the remediation period to an estimated five years. The No Action alternative is not protective of human health and the environment.

Practicable: Are the technologies/techniques under consideration capable of being designed, constructed and implemented in a reliable and cost-effective manner?

The No Action alternative is the easiest alternative to implement. Intrinsic Remediation with Institutional Controls, a fence or deed restrictions, is also easy to implement. Excavation to MAC, Excavation to Low-Level Goal, and Surface Water Treatment require some planning and application, but are relatively straightforward to implement. Excavation to Low-Level Goal will necessitate removal of remaining tanks. Bioventing, Air Sparging, and Groundwater Extraction and Treatment alternatives are increasingly difficult to implement, but on-site feasibility tests indicate the techniques are practical.

Short-and Long term Effectiveness: Are there potential adverse effects to human health, safety and welfare or the environment during construction or implementation of the alternative? How fast does the alternative reach cleanup goals? How well does the alternative protect human health, safety, and welfare or the environment after completion of the cleanup? What, if any, risks will remain at the site?

Each alternative with Institutional Controls protects human health in the short-term. Air Sparing and Groundwater Extraction and Treatment reduce the on-site environmental risk through the water exposure pathway, while Surface Water Treatment reduces the off-site environmental risk through the water exposure pathway during remediation. These alternatives require long remediation time periods. Excavation to MAC, Excavation to Low-Level Goal, and Bioventing increase on-site environmental risk during remediation, but Excavation to Low-Level Goal has the shortest remediation time period. The short-term effectiveness of the No Action alternative is negligible.

Each alternative, except the No Action alternative, is effective and permanently protects human health and the environment in the long-term because no risk or contaminant residuals would remain and no Institutional Controls would be necessary.

Regulations: Will the alternative comply with all state and federal regulations?

Each alternative, except the No Action alternative, eventually complies with the state regulations (cleanup criteria) after the cleanup is completed. Intrinsic Remediation, Excavation to MAC and Bioventing with Water Quality Monitoring are not in compliance with cleanup criteria during the remediation period, which is estimated to require more than 75 years. When Surface Water Treatment is included, off-site surface water quality is in compliance with cleanup criteria during the remediation period. When Air Sparging or Groundwater Extraction and Treatment techniques are included, groundwater and surface water are in compliance with cleanup criteria. Excavation to Low-Level Goal aggressively decreases the remediation period to an estimated five years and is in compliance with cleanup criteria.

Public Input: Have comments received from the community regarding each alternative been considered and addressed?

DESC and ADEC have met regularly with representatives of the community on a RAB for several years. Many community concerns were addressed during the site characterization, risk assessment, interim cleanup actions, and development of cleanup alternatives. DESC and ADEC provided the public an opportunity to comment on the Proposed Plan for Remedial Action during the 30-day comment period. No comments were received. A meeting was held at the Loussac library in Anchorage to discuss this Proposed Plan. The public comments are discussed below in the "Public Involvement" section.

DESCRIPTION OF THE SELECTED CLEANUP ACTION

Based on the information generated from the site characterization, risk assessment, comparative analysis of alternatives, and the interim cleanup actions performed, ADEC and DESC selected Soil Alternative 3b (Excavation to Low-Level Goal, Treatment, Backfilling, and Institutional Controls) with Groundwater Alternative 2 (Water Quality Monitoring and Free Phase Product Removal) and Surface Water Alternatives 2 (Water Quality Monitoring and Institutional Controls) as the cleanup remedy for DFSP-A.

Treatment of Contaminated Soil: The selected cleanup remedy consists of excavation and thermal treatment of site soils to an aggressive low-level goal, 18 AAC 75 Method One Category C. The low-level cleanup goal is designed to remediate source area soils so aggressively that the soil no longer contains sufficient contaminant mass to leach contaminants into site waters at concentrations in excess of groundwater or surface water ARARs. Contaminated soil (30,000 tons) was excavated and the excavation was backfilled with imported material, contoured and hydroseeded. Field screening instruments were used to segregate contaminated soil from uncontaminated soil. Contaminated soil was loaded directly into dump trucks that hauled the material as covered loads to an approved soil treatment facility. DESC has removed the remaining tanks and associated piping so that no site features remain that could delay regulatory approval by ADEC or eventual transfer of responsibility for the site from DESC to the U.S. Army. Transfer criteria will be identified in the water monitoring program which will be drafted by DESC within three (3) months of signature of the ROD. This alternative achieves ARARs in soil, groundwater, and surface water in the shortest possible timeline. It is the best value while addressing ADEC and community concerns.

Groundwater and Surface Water Monitoring: Water quality monitoring will be employed to confirm that contaminant migration: is not occurring off-site, does not cause unacceptable risk to human health or the environment and to evaluate the effectiveness of site cleanup. A water monitoring program will be prepared and evaluated annually to determine whether progress is being made by the selected remedy toward clean goals and whether site cleanup goals have been achieved. If problems are identified, then future remedial action will be considered. After three (3) continuous years of water monitoring on a twice-yearly basis, ADEC and DESC will review the data from the monitoring for trend analysis and discuss the adequacy of the monitoring and the need for revising the frequency and/or sampling protocols. At that time, if appropriate, ADEC may consider granting a No-Further Remedial Action (NFRA) determination for remedial action. The NFRA determination by ADEC and subsequent release of the property back to the Army will be based on DESC demonstrating that the size of the dissolved plume is steady state or shrinking, not migrating off-site, and concentrations of the hazardous substance must be decreasing. A minimum of two (2) years (four (4) consecutive sampling events) of water sampling results demonstrating these trends must be presented by DESC in its petition to ADEC for a NFRA determination.

When cleanup levels are achieved in groundwater monitoring wells for a minimum of four (4) consecutive sampling events, then the groundwater sampling at the site may be ceased. The same conditions apply for discontinuing surface water sampling at the site.

Institutional Controls: Institutional controls will be in place to address human health and environmental risks. The subject areas will be fenced with warning signs posted to limit access to the site prior to achievement of cleanup goals. Following the excavation, the affected areas were hydroseeded to minimize dust. Deed restrictions will be placed on the property until the cleanup goals are achieved. The proposed deed restrictions would restrict the use of perched water as a source of potable water and limit excavation on the FTFA or SDA until soil cleanup levels are achieved. Any contaminated soil encountered below the existing ground surface would be the responsibility of the lessee or new property owner as specified in the deed. To the maximum extent practical, institutional controls developed for Fort Richardson will be utilized for the site since the Army is the ultimate landowner and has existing institutional controls that are in place for the Post that are readily transferable to the site. Unless other arrangements are made, any long-term surface water of groundwater monitoring will be the responsibility of the landowner (USARK) if the property is leased out or the new landowner if the property is transferred outright. The Army shall notify ADEC of any conveyance of title, easement, or other interest in the site to other agencies of the United States, to private parties, or to state and local governments at least ninety days prior to such conveyance.

PUBLIC INVOLVEMENT

A RAB has met for several years during site investigation. The RAB attendees were encouraged to participate during the site characterization, risk assessment process, and through the selection of the cleanup remedy for the site. DESC and ADEC provided the public an opportunity to comment on the Proposed Plan for Remedial Action during the 30-day comment period held from June 16 to July 17, 2000. A meeting was held at the Loussac Library in Anchorage to discuss this Proposed Plan and answer questions. ADEC and DESC representatives were present at the meeting. The meeting provided an opportunity for interested parties to submit written or verbal comments on the Proposed Plan.

RESPONSIVENESS SUMMARY

This section summarizes and responds to comments made during the public comment period following issuance of the Proposed Plan for Remedial Action. No written comments were received during the comment period from June 16 to July 17, 2000.

During the meeting held June 26, 2000, some issues of concern were expressed by members of the public. The following concerns and responses summarize the issues discussed at the meeting.

Concern:

A Community member expressed concern that water monitoring would be discontinued.

Response:

Monitoring wells and surface locations will continue to be sampled until the site is clean and ADEC agrees to No Further Action.

Concern:

A Community member asked who has oversight of the cleanup.

Response:

DESC and their contractor will conduct the cleanup under ADEC direction.

Concern:

A Community member asked about the schedule for the cleanup.

Response:

Two tanks are planned for removal during the Fall 2000 and the remaining tanks and excavation are planned for the summer 2001.

Concern:

A Community member asked about the final disposition of the property.

Response:

The BLM will make the land use decisions

REVIEW OF CLEANUP ACTION AFTER SITE CLOSURE

Since the selected remedy will result in contaminants remaining on-site above cleanup levels, a review will be conducted within five (5) years after signature of the ROD and every five (5) years thereafter. The review is to insure that the remedy continues to provide adequate protection of human health and the environment and will include an evaluation of any changed site conditions, as long as contamination remains above cleanup levels.

Under section 18 AAC75.380(d)(1) of the site cleanup rules, ADEC may require additional action if new information is discovered which leads ADEC to make a determination that the cleanup is not protective of human health, safety, and welfare, or the environment. Therefore, after cleanup activities are completed in accordance with this Record of Decision, the site may be reopened for further action if the cleanup is not protective of human health, safety, and welfare or the environment.

Jennifer Roberts
Section Manager
DoD Oversight
Division of Spill Prevention and Response
Alaska Department of Environmental Conservation

April 9 2003
Date

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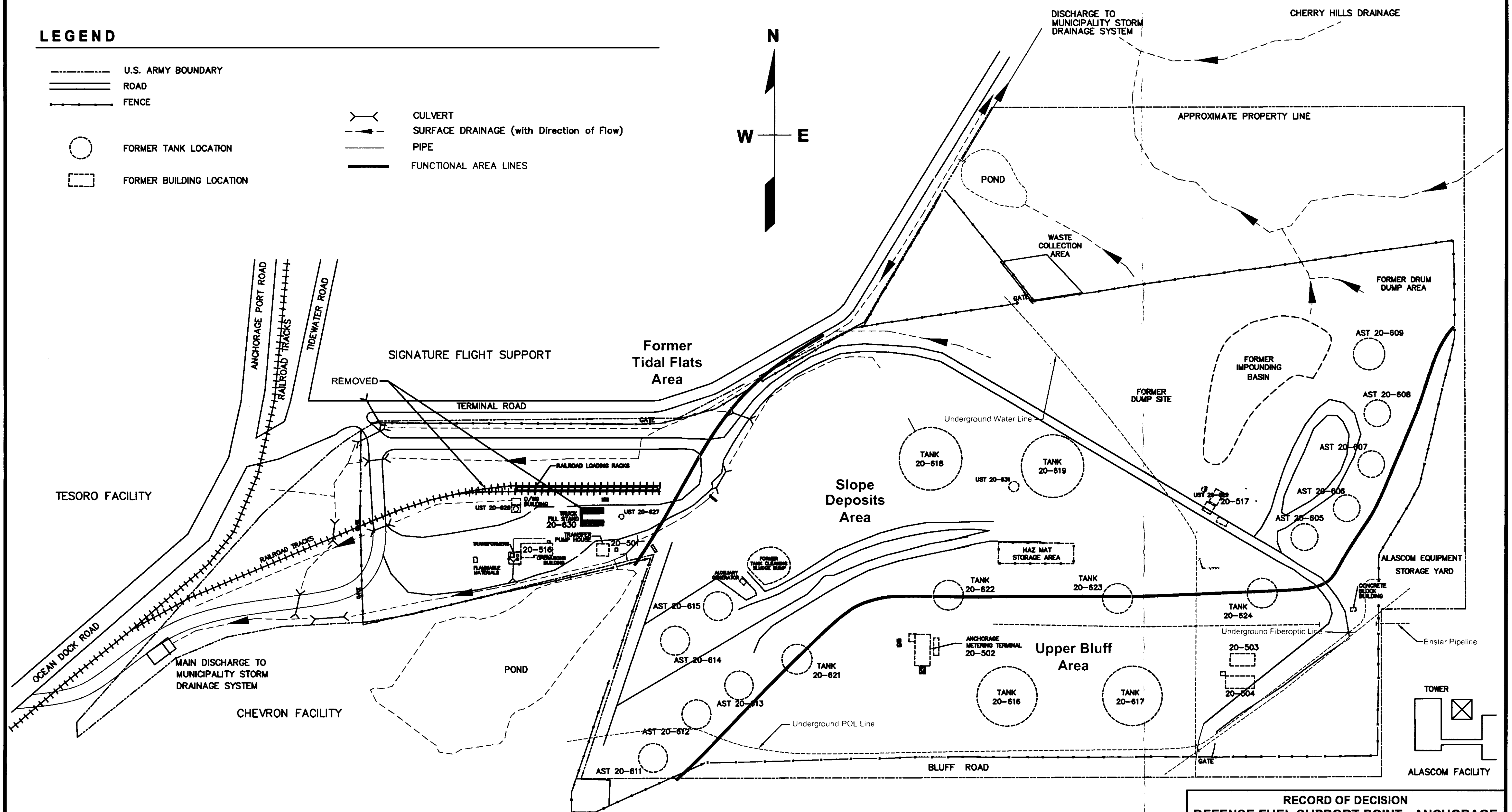

RECORD OF DECISION
DEFENSE FUEL SUPPORT POINT - ANCHORAGE

SITE MAP

JOB NO:	DESC-DESC-003-0006	DRAWN:	DRD
DATE:	Feb. 18, 2003	FILE:	Fig 01-Site Map.dwg

Figure 1