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Environmental Assessment of the Proposed Reconfiguration of the Trans-Alaska Pipeline System, Valdez Marine Terminal

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U.S. Department of Interior
Bureau of Land Management
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EXECUTIVE SUMMARY

This Environmental Assessment (EA) discusses the potential environmental effects of several modifications proposed for the Trans-Alaska Pipeline System (TAPS) Valdez Marine Terminal (VMT), collectively known as Strategic Reconfiguration (SR). Alyeska Pipeline Service Company (APSC), as the operator of the TAPS, has designed and proposed these activities in response to declining crude oil production and throughput in the pipeline system. The proposed actions are designed to simplify plant operations and accommodate new and upgraded equipment, which will be easier to operate and maintain, and thereby extend the commercial life of the system.

The Final Environmental Impact Statement for the Renewal of the Federal Grant for the Trans-Alaska Pipeline System Right-of-Way (TAPS FEIS) evaluates impacts of operations of the TAPS as presently configured. The TAPS FEIS also acknowledges that additional upgrades and modifications, precipitated by factors such as reduced throughput, would likely continue over the 30-year renewal period and discusses impacting factors associated with potential upgrades such as reconfiguration. This EA is tiered to and incorporates by reference the TAPS FEIS, but also includes more detailed information that has become available.

The proposed SR modifications would take place completely within the 1,000-acre VMT, which is on lands owned by the TAPS Owners. The proposed VMT SR as currently proposed consists of:

- Installation of Internal Floating Roofs (IFRs) on at least 12 crude oil storage tanks;
- Removal from service and isolation of the existing Power/Vapor Plant, including its boilers and incinerators;
- Removal from service and isolation of up to 6 of the current 18 crude oil storage tanks;
- Replacement of the existing tanker vapor control system with new vapor combustors;
- Replacement of the existing pumped-seawater firewater supply system with a gravity-flow freshwater supply system; and
- Providing electrical power by (A) connection to the commercial power grid and installation of an on-site backup diesel power plant or (B) installation of an on-site primary diesel power plant and backup.

Impacts associated with the proposed actions are generally positive; however, there may be short-term negative impacts associated with construction activities such as removal and/or conversion of the tanks, installation of combustors and power equipment, and creation of the freshwater firewater reservoir. Short-term, minor air quality impacts would occur because of fugitive dust emissions from earth disturbance and increased transportation. The risk of small petroleum spills would be increased during construction. Relatively small areas of vegetation that have colonized previously disturbed areas on the site will be destroyed; however, no wetlands are expected to be impacted. Other short-term and minor impacts would include increases in water use, wastewater generation, noise, and hazardous and domestic waste generation. Because of the localized nature of the proposed actions on an already developed site and the short duration of the activities, any potential impacts to wildlife would be negligible. Birds and mammals that use the facility as habitat may be disturbed during construction activities. No threatened and endangered species are known or expected to use the facility, and therefore no impacts are expected.

In the longer-term, changes resulting from SR would reduce overall environmental impacts when compared to impacts of continued operations under the current configuration. Installing internal floating roofs, taking the Power/Vapor Plant out of service, and installing a new tanker vapor control system would reduce total air emissions at the VMT and improve air quality. Simplification of terminal operations, reduction in the complexity of the physical infrastructure, and elimination of up to six crude oil storage tanks should reduce the potential for large spills. Water use for normal VMT domestic and industrial uses would be reduced, but a new water use would be established for the freshwater firewater reservoir. Domestic waste generation would be reduced since fewer personnel would be on the terminal. Non-hazardous and hazardous waste generation would be reduced since there would be fewer facilities and equipment to be maintained.

Sawmill Creek, the proposed water source for the firewater reservoir, supports salmon spawning runs. Mitigation measures were prescribed to assure that salmon spawning and rearing in Sawmill Creek and essential fish habitat would not be adversely impacted by the water withdrawals. No impacts on cultural resources or land use would occur. The overall socioeconomic impacts of SR would be positive in the short-term at the local level due to increased employment and spending during the construction phase through 2007, and positive in the long term at the state and national levels because the useful life of TAPS would be extended. Locally, simplification of the VMT will result in a phased reduction and redistribution in the VMT workforce resulting in a loss of jobs and related economic and social effects, which could include reductions in personal income, increased unemployment, and decreased demand for goods and services. There should be no long-term effects on subsistence or subsistence resources. No high or disproportionate impacts on minority or low income populations were identified.

Cumulative impacts for this proposed action and other reasonably foreseeable actions would be minor and local, with no significant synergistic effects. The primary unavoidable disturbances resulting from the proposed action would be related to construction activities occurring within the boundaries of the terminal. The impacts would be short-term, confined to the VMT, minor, and readily mitigated. Mitigation measures for unavoidable impacts are suggested.

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LIST OF ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ACMP	Alaska Coastal Management Plan
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
AFFF	Aqueous film-forming foam
ANILCA	Alaska National Interest Lands Conservation Act
APSC	Alyeska Pipeline Service Company
bbl	Barrel or barrels
BLM	Bureau of Land Management
BMP	Best management practices
BTT	Biological treatment tanks
btu	British thermal unit
BWT	Ballast Water Treatment
BWTF	Ballast Water Treatment Facility
cfm	Cubic feet per minute
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CMP	Coastal Management Plan
CO	Carbon monoxide
CO_2	Carbon dioxide
CVEA	Copper Valley Electric Association
CZM	Coastal Zone Management
DOT	U.S. Department of Transportation
EA	Environmental assessment
EFH	Essential fish habitat
EIS	Environmental impact statement
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
FEIS	Final environmental impact statement
gal	Gallon or gallons

LIST OF ACRONYMS AND ABBREVIATIONS (Cont'd)

gpd	Gallons per day
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HAP	Hazardous air pollutant
hp	Horsepower
hr	Hour or hours
IFR	Internal floating roof
IMS	Institute of Marine Science
JPO	Joint Pipeline Office
KV	Kilovolt or kilovolts
KW	Kilowatt
MACT	Maximum Achievable Control Technology
mgd	Million gallons per day
MP	Milepost
MW	Megawatt or megawatts
NE NPRA DEIS	Draft Amended Integrated Activity Plan/Environmental Impact Statement for the Northeast National Petroleum Reserve – Alaska
NEPA	National Environmental Policy Act
NESHAP	National Emission Standard for Hazardous Air Pollutants
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOx	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OCC	Operations Control Center
OPA	Oil Pollution Act
PAH	polycyclic aromatic hydrocarbon
PM	Particulate matter
PM_{10}	Particulate matter sized 10 micrometers (µm) and less
PM2.5	Particulate matter sized 2.5 micrometers (µm) and less
PRT	Power recovery turbine
PSD	Prevention of Significant Deterioration

LIST OF ACRONYMS AND ABBREVIATIONS (Cont'd)

psia	Pounds per square inch absolute
PWS	Prince William Sound
RCAC	Regional Citizens' Advisory Council
ROW	Right-of-way
SCADA	Supervisory control and data acquisition
SHPO	State Historical Preservation Officer
SO_2	Sulfur dioxide
SPCC	Spill prevention, control, and countermeasures
SR	Strategic Reconfiguration
SVE	Soil vapor extraction
TAPS FEIS	Final Environmental Impact Statement for the Renewal of the Federal Grant for the Trans-Alaska Pipeline System Right-of-Way
TAPS	Trans-Alaska Pipeline System
TBP	Tank bottom processing
tpy	Tons per year
TSD	Treatment, storage, and disposal
USC	United States Code
USCG	United States Coast Guard
USFWS	U.S. Fish and Wildlife Service
VBU	Vapor blower unit
VCU	Vapor combustion unit
VMT	Valdez Marine Terminal
VOC	Volatile organic compound

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1.0 PURPOSE AND NEED

1.1 INTRODUCTION

Alyeska Pipeline Service Company (APSC) and the Trans-Alaska Pipeline System (TAPS) Owners are seeking a notice to proceed from the Joint Pipeline Office, Bureau of Land Management (JPO-BLM), to implement a set of modifications to specific facilities and operations over a period of three to four years at the Valdez Marine Terminal (VMT) located in Township 9 South, Range 6 West, Sections 17 through 20 and Township 9 South, Range 7 West, sections 13 and 24, Copper River Meridian, Alaska. The proposed modifications at the VMT are collectively identified as the VMT Strategic Reconfiguration (SR). This Environmental Assessment (EA) discusses the potential environmental impacts of the proposed VMT SR.

1.1.1 Scoping and Consultation

The BLM held a public scoping meeting in Valdez, Alaska, to obtain comment from the interested public. Prior to the meeting, BLM consulted with the Valdez Native Tribe, United States Coast Guard (USCG), City of Valdez, and the Prince William Sound Regional Citizens' Advisory Council (RCAC) (see Appendix A) informing them of the project and public participation process, and inviting their input. The meeting was held on August 18, 2004. Verbal comments were received from five individuals. One of these commenters, the Prince William Sound RCAC also provided written comments.

In addition to internal consultation among agency representatives within the JPO, the BLM consulted the Alaska Department of Environmental Conservation (ADEC) air quality staff regarding the proposed project.

BLM requested informal consultation with the U.S. Fish and Wildlife Service (USFWS) in accordance with the Endangered Species Act. The USFWS responded (letter attached in Appendix A) stating no listed species were present in the proposed area, no species have been proposed for listing, and no proposed or designated critical habitat areas are in the proposed location. USFWS stated that although a few Steller's eiders winter in Valdez, this project will have no effect on this species. USFWS concluded the requirements of Section 7 (a) (2) of the Endangered Species Act were satisfied and no further consultation pursuant to the Endangered Species Act (ESA) will be required for this project.

BLM also consulted the National Marine Fisheries Service (NOAA Fisheries) in accordance with the Magnuson-Stevens Fishery Conservation and Management Act. NOAA Fisheries responded that the described action will have no more than a minimal impact and will not result in any substantive adverse effect to Essential Fish Habitat (EFH). No further EFH assessment or consultation will be required and NOAA Fisheries did not offer any EFH Conservation Recommendations.

BLM requested informal consultation with the Alaska Office of History and Archaeology State Historical Preservation Officer (SHPO) in accordance with Section 106 of the National Historic Preservation Act. SHPO responded stating that no historic properties are affected by the proposed projects at the VMT.

BLM also met with the Chugach Regional Resources Commission on July 1, 2004 to inform Native tribal leaders of APSC's proposal to reconfigure the VMT, and requested input on the proposed projects. In addition BLM also contacted the Inter-Tribal Oil and Gas Coalition to inform tribal leaders of the Valdez scoping meeting and to solicit comments on the proposals.

1.1.2 Assumptions

The TAPS, which includes the VMT facilities, was authorized by Congress in 1973. Congress found and declared the development and delivery of North Slope oil to the domestic market to be in the National interest. Congress also found and declared that extensive studies of the environmental, social, and economic impacts had been conducted and that the earliest possible construction of a trans-Alaska oil pipeline from the North Slope to Port Valdez was in the best interest of the Nation. This EA assumes that the environmental impacts and mitigations of the impacts for the TAPS project were accepted as authorized by Congress.

The original Grant of Right of Way (ROW) for the TAPS in 1974 was issued for a 30-year period. Preceding the renewal of the ROW for an additional 30 year period, the BLM conducted another Environmental Impact Statement (EIS) addressing environmental impacts associated with the continued operations and maintenance of the TAPS. The Record of Decision (ROD), dated January 8, 2003 renewed this activity based on several findings. One of these findings was that the current operations (which includes the VMT) were in compliance with the terms of the 1974 Grant and all applicable statutes and regulations. Another found that there was still a continued need for the delivery of energy products for this country. Because this is a recent Secretary of Interior decision and there have been no challenges to this decision, this EA assumes that the existing environmental impacts and mitigations of those impacts at the VMT are accepted.

This EA assesses only those potential environmental impacts associated with changes to the current existing environment from SR activities as proposed by APSC in a May 18, 2004, letter to the Joint Pipeline Office as they represent significant changes to the TAPS. It is important to note that VMT SR is an on-going process and the final design of the upgrades has not been fully determined or approved. The JPO is responsible for issuing most of the necessary permits and authorizations to operate and maintain TAPS. The BLM has general oversight and monitoring responsibilities and authorities, and exercises authority for construction projects through the requirement for Notice to Proceed applications. Information is presented in this EA to encompass the probable range of proposed SR changes. Further environmental analysis will be necessary if there are substantial changes in the proposed actions or additional activities are proposed in the future.

This EA summarizes information presented in the TAPS Final Environmental Impact Statement (FEIS)[1] (BLM 2002a) and in the Strategic Reconfiguration of the Valdez Marine Terminal: Environmental Report (OASIS 2004). In order to avoid duplication, this EA is tiered to and incorporates by reference the information presented in the TAPS FEIS, including the relevant analyses and conclusions. Other documents are included by reference as listed in Section 6.0.

[1] A copy of the TAPS FEIS may be obtained through the Joint Pipeline Office web site at http://www.jpo.doi.gov/ by clicking on Right-of-Way Renewal, Argonne National Laboratory, EIS Documents.

1.2 PURPOSE AND NEED

TAPS consists of an 800-mile crude oil pipeline designed to transport crude oil from the North Slope of Alaska to the VMT, which provides facilities for storage of crude oil and for loading crude oil into tankers for shipment to various markets.

The proposed VMT SR modifications are intended to significantly reduce the physical structure and complexity of the VMT, to improve operating efficiency, and to extend the useful life of TAPS. In addition, VMT SR is intended to reduce the environmental impacts and risks associated with normal TAPS operations through long-term reductions in air emissions, water use, wastewater generation, energy consumption, solid and hazardous waste generation, and the risk of oil spills.

1.3 RELATIONSHIP TO STATUTES, REGULATIONS, PERMITS, AND OTHER PLANS

1.3.1 Relationship to the TAPS Final Environmental Impact Statement for Right-of-Way Renewal

In 2002, the BLM completed the TAPS FEIS (BLM 2002a), which identified and analyzed the probable direct, indirect, and cumulative environmental impacts associated with renewal of the TAPS right-of-way, including operations and maintenance changes and upgrades reasonably expected to occur over the 30-year renewal period (BLM 2002a). The TAPS FEIS stated that there were no probable significant adverse environmental impacts from TAPS right-of-way authorization for an additional 30 years. The BLM concluded that operations and maintenance changes and upgrades, such as VMT SR, were not expected to result in adverse environmental impacts different in context or intensity from those occurring under existing operations. This EA expands on information in the TAPS FEIS, but also incorporates by reference much of the baseline information, analyses, and conclusion of the FEIS and is therefore tiered to it.

1.3.2 Relationships to Laws and Regulations

The project proponent and the JPO-BLM in their authorization and National Environmental Policy Act (NEPA) analysis must comply with numerous federal laws, including the following:

- Clean Air Act as amended, 42 USC 7401 et seq.
- Clean Water Act of 1977 33 USC 1251 et seq.
- Safe Drinking Water Act as amended, 42 USC 300f et seq.
- Wild and Scenic Rivers Act as amended 16 USC 1271
- Wilderness Act of 1964 16 USC 1131 et seq.
- Endangered Species Act of 1973 as amended 16 USC 1531 et seq.
- Resource Conservation and Recovery Act of 1976 42 USC 6901 et seq.
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 42 USC 9615
- Fish and Wildlife Coordination Act as amended 16 USC 661-664
- Coastal Zone Management Act 16 USC 1451-1464

- Coastal Barrier Resources Act of 1982 16 USC 3501-3509
- National Environmental Policy Act of 1969 as amended 42 USC 44321 et seq.
- Federal Land Policy and Management Act of 1976 42 USC 1701 et seq.
- National Historic Preservation Act of 1966 as amended 16 USC 470
- Archaeological Protection Act of 1979 16 USC 470
- American Indian Religious Freedom Act of 1978 as amended 42 USC
- Executive Order 11988 – Floodplain Management
- Executive Order 11900 – Protection of Wetlands
- Executive Order 12898 – Environmental Justice in Minority and Low Income Populations

1.3.3 Federal and State Permits and Approvals Needed to Implement the Proposed Action

The following is a list of permits and approvals that may be required from state and federal agencies for various components of the proposed activities discussed in this EA:

- Section 10/404 Permits – The U.S. Army Corps of Engineers issues permits required for certain activities that impact wetlands and other waters of the United States.
- NPDES – The U.S. Environmental Protection Agency (EPA) issues National Pollutant Discharge Elimination System (NPDES) permits for certain activities that disturb minimum surface areas of ground (storm water construction) or result in discharges to waters of the United States.
- Notice to Proceed – Under Stipulation 1.7 of the Federal Grant, notices to proceed must be obtained from BLM for modifications to TAPS that involve construction or a change in the Design Basis.
- Consistency Determination – Alaska Department of Natural Resources (ADNR) issues a Consistency Determination when a project is in conformance with the Alaska Coastal Management Plan.
- Water Quality Certification – ADEC authorizes federal permits for work that affects waters of the United States though certification of Section 10/404 permits.
- Air Quality Permit – ADEC issues air quality permits for certain activities that emit minimum levels of criteria air pollutants.
- Marine Vapor Control – the USCG regulates marine vapor control systems under 33 CFR 154, Subpart E
- Temporary Water Use – Alaska Department of Natural Resources (ADNR) issues Temporary Water Use permits required for work in stream or water withdrawal.
- Oil Discharge Prevention and Contingency Plan – ADEC reviews and approves these spill plans for marine terminals as required under state law.
- Fish Habitat – ADNR issues Fish Habitat permits that are required for work in streams supporting fish.

1.3.4 Conformance with Existing Land Management Plans and Policies

The BLM has three multiple-use land use plans that encompass portions of the TAPS as follows: the Southcentral Management Framework Plan (BLM 1980), the Fort Greely Resource Management Plan (BLM 1994), and the Utility Corridor Proposed Resource Management Plan (BLM 1989). The BLM is also in the process of developing a new resource management plan for eastern Alaska, which will address management of Federal lands.

The Southcentral Management Framework Plan covers portions of the TAPS right-of-way on BLM lands south of the Alaska Range, but discusses no management decisions affecting TAPS. The Fort Greely Resource Management Plan acknowledges the prior existence of TAPS on BLM where it traverses the military installations. The Utility Corridor Proposed Resource Management Plan re-enforces the preeminence of the pipeline on BLM lands near TAPS north of the Yukon River but has no bearing on the VMT. The proposal for SR of the TAPS at the Valdez Marine Terminal is in conformance with these plans.

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2.0 PROPOSED ACTION AND ALTERNATIVES

Two alternatives and a sub-alternative are evaluated in this Environmental Assessment. The two alternatives consist of 1) the proposed action of the reconfiguration of the TAPS at the VMT, and 2) no action. The proposed action alternative includes a sub-alternative consisting of two options for power generation at the VMT: (A) connection to a local utility, and (B) installation of a new on-site power generation facility. The final decision for which option to use for power generation has not yet been made. Therefore, both options of the sub-alternative are analyzed under the proposed action alternative.

2.1 DESCRIPTION OF THE EXISTING VMT

The VMT occupies approximately 1,000 acres on land owned by the TAPS Owners on the southern shore of Port Valdez, at the northeastern end of Prince William Sound, as shown on Figure 2-1. The VMT, with four tanker loading berths and a working storage capacity of 8.78 million barrels (bbl) of crude oil, is designed to allow production on the North Slope to continue unimpacted by delays in the marine transportation system.

The reader is directed to the TAPS FEIS (BLM 2002a) for a thorough description of the TAPS at the VMT as currently configured and the environmental impacts of operations and maintenance of the TAPS in its current configuration.

2.1.1 Tank Farms

The tanks used to store crude oil from the pipeline are located in two separate tank farms: the East Tank Farm with 14 tanks and the West Tank Farm with four tanks (Figure 2-2). The tank farms include lined secondary containment cells (two tanks per cell) with sufficient capacity to hold the total volume of the tanks, plus an allowance for precipitation. A vapor control system provides vapor balance and blanket gas needed to keep the vapor space in the tanks inert. Storm water runoff generated within the tank farms is discharged to the Industrial Wastewater Sewer System and is treated in the Ballast Water Treatment Facility.

2.1.2 Operations Control Center

The Operations Control Center at the VMT controls oil movements along the entire pipeline system, monitors the operations of the large process Tanks 92, 93, and 94 (commonly referred to as the 90s Tanks) in the Ballast Water Treatment Facility, and directs the flow of oil to the tank farms and to marine tankers at the berths. Controllers in Operations Control Center monitor and control the system 24 hours a day using the supervisory control and data acquisition (SCADA) host computer and associated equipment. If emergency conditions occur, the Operations Control Center controller can shut down an entire pump station and isolate it from the line or shut down the entire pipeline, pipeline segments, and tanker loading.

2.1.3 Power/Vapor Plant

The Power/Vapor Plant has three primary functions: generate oxygen-depleted blanket gas for the crude tanks and incinerate tank vapor emissions; provide vapor control and incineration of displaced vapors from crude tankers that are being loaded; and generate electrical power for the VMT.

The vapor control system controls atmospheric emissions of crude oil vapors from storage tanks and from tankers during loading at berths. The system also provides inert (i.e., oxygen-depleted) blanket gas to the crude oil storage tanks, thus maintaining a safe operating condition by preventing the formation of combustible hydrocarbon mixtures in these tanks. Three vapor incinerators are operated at the existing Power/Vapor Plant to thermally destroy excess vapors generated during tank filling and tanker loading. The incinerators must be fired continuously in order to maintain the condition of the refractory, even when no vapors are available; this requires firing the units on auxiliary fuel (diesel) in order to have the system ready when needed. In addition, incinerator capacity for the peak requirement must be online continuously, resulting in nearly 100 percent reserve capacity.

The VMT's primary power-plant facilities include three diesel-fueled steam boilers coupled to three condensing-steam turbines that drive electrical generators, each with a rated output of 12.5 megawatts (MW), or a total of 37.5 MW. The peak load for the existing terminal operations is approximately 12 MW. Two of the three diesel-fuel steam turbines are normally run in order to maintain a 100 percent spinning reserve so that power is maintained even if one of the steam turbine/generator units has an upset. Two 12-cylinder diesel generators with a total capacity of 2.6 MW serve as backup (secondary) power sources. Four uninterruptible power supply systems supplied by a 125-volt battery bank are provided for essential control equipment.

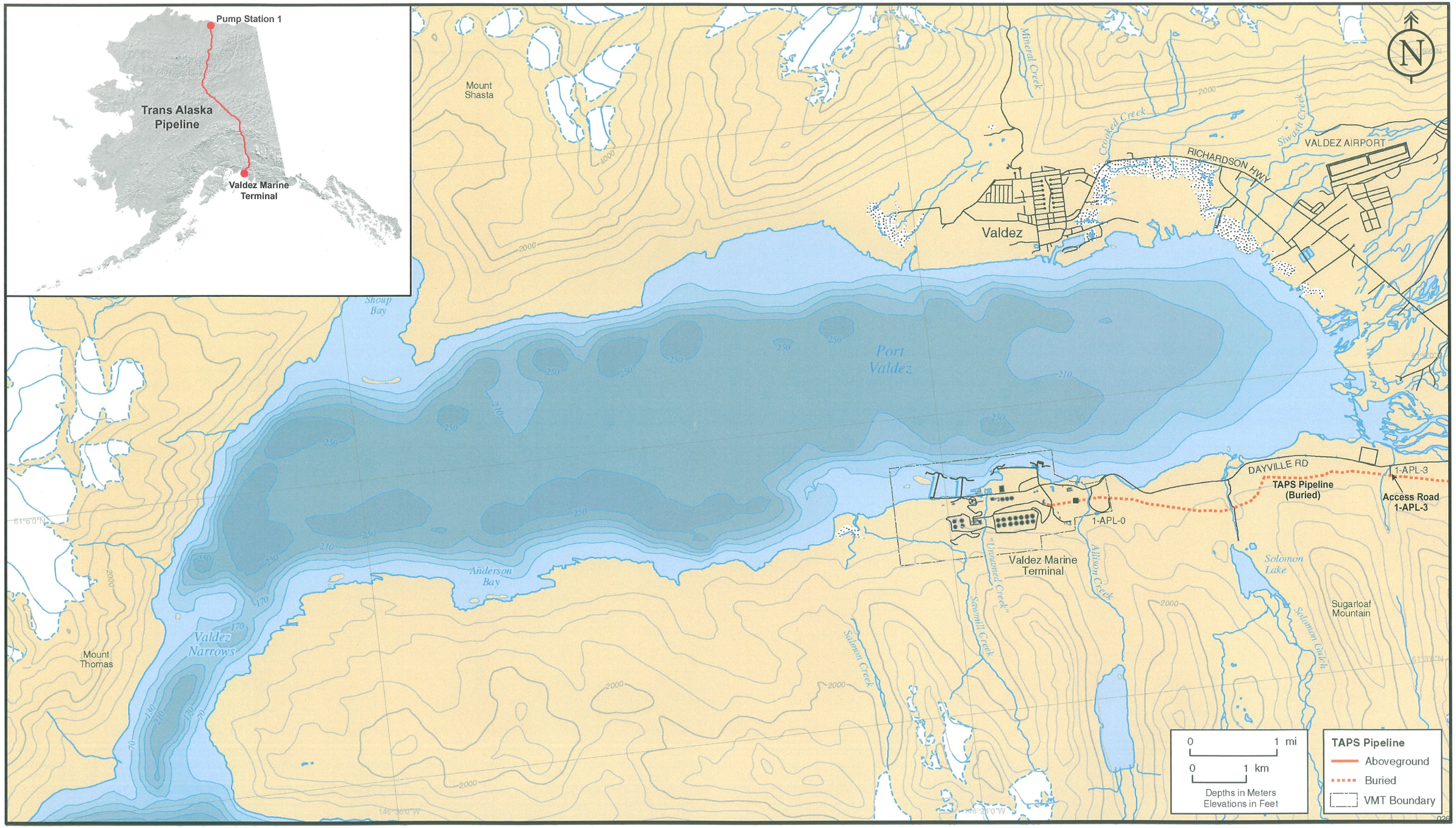
2.1.4 Ballast Water Treatment Facility

The Ballast Water Treatment Facility processes oil-contaminated waters. Although the facility is designed primarily to treat the ballast water from incoming tankers, it also processes water separated from crude oil, water from oily sumps, oily wastewaters, and the Industrial Wastewater Sewer System. Facilities that discharge to the Industrial Wastewater Sewer System include tank farm containment areas, Power/Vapor Plant areas, fuel storage and loading areas, emergency response building/old administration building area, sludge tank area, transformer dike areas, berths, fire pump buildings, West Metering facilities, and maintenance/warehouse area. Vessel bilge waters and oil spill waters are also put in the system. Vessel discharges of ballast and bilge water account for approximately 93 percent of the total wastewater volume processed by the Ballast Water Treatment Facility (TAPS Owners 2001).

The Ballast Water Treatment Facility has a capacity to treat a monthly average of 21 million gallons per day (mgd) and a daily maximum of 30 mgd. In 2003, the monthly average Ballast Water Treatment Facility effluent flow was 10.2 mgd (OASIS 2004). Treated ballast water is discharged from the Fan/Meter Building into Port Valdez through a submerged 48-inch-diameter outfall line designed to maximize the mixing of effluents with Port Valdez waters.

2.1.5 Metering

The pipeline delivers crude oil to East Metering, where the throughput is measured. East Metering is a component for both the pipeline and VMT leak detection systems. West Metering provides the custody transfer metering between the terminal and tankers. Both the East and West Metering facilities consist of banks of turbine meters, strainers, prover loops, and pressure controllers.



Source: OASIS 2004.

Figure 2-1
Location Map of the Valdez Marine Terminal

Figure 2-2. Aerial Photographs of Valdez Marine Terminal.

2.1.6 Tanker Berths and Tanker Vapor Recovery

The VMT has four tanker loading berths with associated crude oil piping (Figure 2-2). Berth 1, which is a floating berth with a capacity of up to 80,000 bbl per hour, is not being used and the piping has been drained and isolated. The other three berths (3, 4, and 5; Berth 2 was never built) are fixed berths with up to 110,000 bbl per hour loading capacity each. Berth 3 is no longer being used for crude and ballast transfers. Berths 4 and 5 are the primary loading berths, and are connected to the tanker vapor control system. Vapors recovered from tankers are piped to the Power/Vapor Plant for incineration. Controlled loading on Berths 4 and 5 is regulated by EPA under the 40 CFR 63, Subpart Y, Maximum Achievable Control Technology (MACT) Standards for Marine Vessel Tank Loading Operations and by the applicable portions of USCG regulations under 33 CFR 154, Subpart E.

2.1.7 Fire Protection Systems

The VMT is equipped with fire detection and suppression systems, including the firewater protection system, portable fire extinguishers, water and foam systems, Halon, and carbon dioxide (CO_2). The VMT has fire trucks and tugboats equipped with firefighting equipment to supplement the firewater protection system.

The primary onshore fire suppression system is the system that supplies seawater from Port Valdez to hydrants near critical buildings, tanks, and equipment. This system is capable of providing up to 10,000 gallons per minute of salt water to the firewater system. Each tanker berth is protected by a firewater system consisting of a pump with a capacity of 2,000 gallons per minute of seawater, a foam proportioning skid, and associated piping and connection points. The berth system is isolated by valve from the onshore firewater system.

Firefighting foam can be injected into tanks in the East and West Tank Farms using submerged injectors for combating fires inside tanks. Six other tanks are protected with foam equipment that can apply foam to the top of the fuel or oil surface using foam chambers. These tanks include the two main fuel storage tanks, two oil recovery tanks (80s Tanks), and the power plant day tanks. For these tanks, permanent foam-solution lines run from foam chambers to points outside the secondary containment dikes where a foam truck can connect and make foam to extinguish a fire.

2.1.8 Spill Response Systems

The most likely source of spills at the VMT are potential maintenance and system integrity problems, such as pinhole corrosion leaks in pipes, improperly installed fittings, leaking gaskets, or valve packings. Other sources of spills would be equipment failure and operator error. Major systems comprising the risk of the largest spills include piping and facilities, storage tanks, and pipelines.

Spill prevention and response measures for the VMT are established in the Valdez Marine Terminal Oil Discharge Prevention and Contingency Plan, CP-35-2 (APSC 2003a), which has been approved by the Alaska Department of Environmental Conservation, the U.S. Coast Guard, BLM, and U.S. Department of Transportation (DOT). The VMT plan describes the organization, strategies, equipment, and personnel for oil spill prevention and response. The oil spill response organization is based on the Incident Command System. If a spill occurs, the initial response will involve VMT-based equipment and personnel. The plan (CP-35-2) commits that a total of 78 initial responders will be available at any time. Depending on the

volume spilled, the volume at risk of being spilled, or the potential complexity of the response requirements, additional response resources will be mobilized in accordance with the agency approved response plan for the VMT. The proposed activities will not change the response capabilities of the agency approved plan.

2.2 PROPOSED RECONFIGURATION

APSC is proposing to strategically reconfigure TAPS to accommodate throughput that has declined from 2 million barrels per day to about 1 million barrels per day currently. Throughput is likely to decline further over time. The focus of SR is mainly on removing from service or eliminating current processes and facilities while adding more efficient methods of crude oil storage and power generation using the best available technologies. The VMT SR activities are planned to start in early 2005 and be completed as early as 2007 (OASIS 2004).

Table 2-1 summarizes the major components of the VMT before and after reconfiguration. Figure 2-2 depicts existing terminal facilities on an aerial photograph. VMT SR generally involves the following changes:

- Installation of Internal Floating Roofs (IFRs) on at least 12 crude oil storage tanks;
- Removal from service and isolation of the existing Power/Vapor Plant, including its boilers and incinerators;
- Removal from service and isolation of up to six of the current 18 crude oil storage tanks;
- Replacement of the existing tanker vapor control system with new vapor combustors;
- Replacement of the existing pumped-seawater firewater supply system with a gravity-flow fresh-water supply system; and
- Providing electrical power by (A) connection to the commercial power grid and installation of an on-site backup diesel power plant or (B) installation of on-site primary diesel power plant and backup.

2.2.1 Power Generation and Vapor Control

A primary purpose of SR is to reduce the physical infrastructure and the complexity of the operations at the terminal in line with the ongoing reconfiguration of TAPS. Elimination of the existing Power/Vapor Plant is key to this strategy.

2.2.1.1 Vapor Control for Crude Oil Storage Tanks

Internal floating roofs were not viable at the time of VMT construction because the use of such roofs requires the crude oil vapor pressure to be at or below 11.1 pounds per square inch absolute (psia). At a throughput of approximately 1.6 million bbl per day, the incoming crude temperature at VMT drops below 98°F — the point at which the vapor pressure of the crude oil drops to 11.1 psia. The current TAPS throughput of about 1 million bbl per day is expected to decline further over time. The current incoming crude temperature at the VMT is approximately 60°F, allowing sufficient flexibility to handle any new North Slope fields that may come on line. Floating-roof tanks are the industry standard for storage of volatile organic liquids with vapor pressure less than 11.1 psia (OASIS 2004).

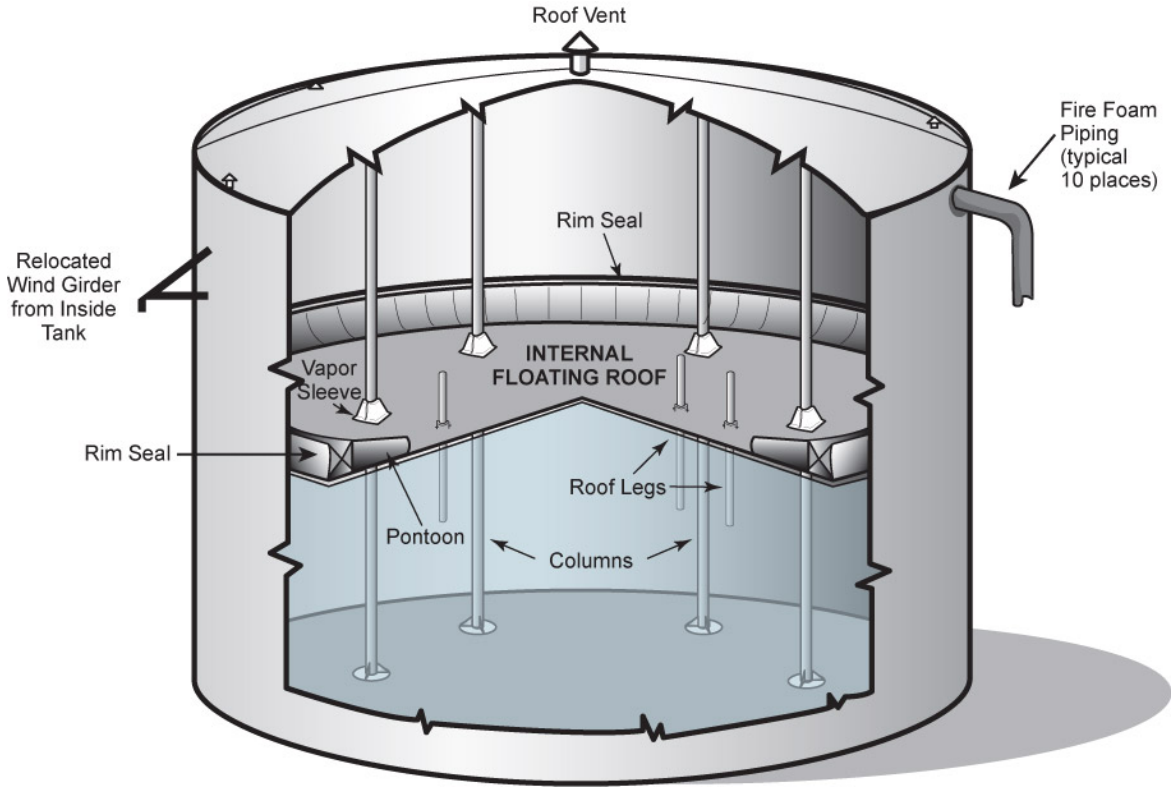
Table 2-1. Major Features of the VMT Before and After Reconfiguration.

Component	Current	Reconfiguration
Area	1,000 acres.	No change.
Tanker Loading Berths	Berth 1 (floating) with 80,000 bbl/hr capacity and Berth 3 (fixed) with 110,000 bbl/hr capacity are no longer used for crude oil or ballast transfers. Berths 4 and 5 (fixed) with 110,000 bbl/hr capacity each (220,000 combined) are used for crude oil or ballast transfers and have tanker vapor collection.	No physical change; only Berths 4 and 5 will be used for tanker loading. However, the nominal combined loading rate will be reduced to 140,000 bbl/hr.
Crude Oil Holding Tanks	18 tanks 250 feet in diameter and 63.3 feet high with fixed conical roofs: 4 at West Tank Farm, 14 at East Tank Farm. Each tank has 510,000 bbl total volume, for a total of 9.18 million bbl. Each tank's working inventory is 488,000 bbl, for a total of 8.78 million bbl.	Removal from service and isolation of up to 4 tanks in the West Tank Farm and associated facilities, and up to 2 tanks in East Tank Farm. Remaining tanks will be equipped with IFRs. Working inventory of each tank will be 459,000 bbl, with total of at least 5.5 million bbl.
Tanker and Crude Tank Vapor Control	Crude tanks require blanket gas to inert vapor space and are connected to a vapor control system. Tanker and tank vapors collected and burned in Power/Vapor Plant, which must run continuously and burn fuel when vapors are not available.	IFRs on crude tanks will eliminate need for vapor control. New vapor combustion system will handle tanker vapors, operate only when needed, and reduce combustion emissions.
Power Generation	Power/Vapor Plant provides all power for VMT and has capacity of 37.5 MW, with 2.6-MW diesel backup. Existing connection point for a power recovery turbine (PRT station) on backflow pressure control piping manifold.	VMT peak demand lowered to 5 MW from 12 MW with elimination of Power/Vapor Plant. 3- to 5-MW of diesel generation capacity installed for primary power or commercial power (with diesel backup).
Fire Suppression System	Seawater system requiring dedicated pumps. Berth firewater systems using seawater.	New freshwater reservoir created in quarry above West Tank Farm. Fill/maintain water level via temporary diversion of Sawmill Creek. Tie-in to existing firewater system near East Tank Farm via new 24-inch buried line and take main, east, and west diesel firewater pumps out of service. Berth firewater systems remain unchanged.

Source: Oasis 2004.

This vapor space in the existing conical fixed-roof tanks, and therefore the need for inerting blanket gas, will be eliminated by installation of internal floating roofs on the crude tanks (Figure 2-3). Installation of internal floating roofs will also allow the existing Power/Vapor Plant to be isolated from the crude tanks and eliminate a significant number of instruments, valves, and compressors. Also, because internal floating roofs will eliminate the need to incinerate tank vapors, an estimated 500 to 700 equivalent barrels (bbls) of oil would be saved each day for loading on tankers.

Figure 2-3. Conceptual Diagram of Internal Floating Roof System.



A risk assessment (Capstone 2004) conducted for APSC has shown that with appropriate safeguards, the level of safety and system integrity for a tankage system with internal floating roofs is equal to or greater than a system with cone roof tanks incorporating vapor recovery.

2.2.1.2 Tanker Vapor Control

VMT SR will involve installation of new vapor combustors, which are significantly simpler devices for vapor incineration than the current system of boilers and incinerators in the Power/Vapor Plant. The proposed vapor combustion system is designed with a different refractory that allows operation only when there are vapors to incinerate as opposed to the current system that must be fired continuously.

A vapor blower unit (VBU) and four vapor combustion units (VCUs) would be installed to incinerate hydrocarbon vapor displaced from tankers during the loading process. The VBU transfers the vapors from the berths to the VCUs and helps remove liquids from the vapors. The blowers and supporting equipment would be installed on a separate foundation, likely located near the intersection of the Berth 4 and 5 piping. The VCUs, which are now standard equipment at marine and truck loading facilities, combust the hydrocarbons in the vapors in a controlled manner. The VCUs must be located at least 100 feet from any marine vessel berth. Support equipment and controls would be provided with the VCUs. VCU stacks have a diameter of about 12 feet and an overall height of approximately 70 feet. VCUs, which are expected to exceed 98 percent efficiency, can handle wide swings in vapor composition and flow rates, and are designed for off/on service since the refractory does not require combustor heat-up or cool-down. At least two 6,000-gallon propane tanks would be used to supply pilot and assist gas to the VCUs.

2.2.1.3 Power Generation Sub-Alternative

A new system will be installed to provide power to the VMT and enable the removal from operation and isolation of the existing Power/Vapor Plant. Elimination of the Power/Vapor Plant will reduce VMT power demand from 12 MW to 5 MW because the existing plant is a significant user of power. The power generation sub-alternative consists of two options. The two options that have been identified to provide the needed 5 MW are (A) connection to the local utility or (B) installation of a smaller on-site generator. Backup power under either option would be provided by on-site diesel-engine-driven generator sets.

Power Generation Option A – Connection with Local Utility

APSC may be able to purchase power from the local utility, Copper Valley Electric Association (CVEA). This would require installation of a new 25-kilovolt (KV) power line from the Meals substation (near TAPS access road 1-APL-3) on a new CVEA right-of-way aligned with the existing TAPS right-of-way. The power line could be between 4 and 5 miles long but may be shorter if adequate power is available at the Solomon Lake hydroplant or the Petro Star refinery substation. A new substation would be installed on the VMT to transform the power to the APSC 13.8-KV distribution voltage. The location of the substation would likely be near the mainline Battery-Limit Valve 972/East Metering Building area.

Current air quality operating permits issued by ADEC to CVEA[2] indicate the utility may have sufficient installed generator capacity to produce the additional power required by APSC. APSC is in discussions with CVEA on this option, but no contracts are in place to provide power for VMT (Schoff 2004). CVEA is currently conducting a major evaluation of this option from the perspective of efficiency, reliability, and environmental impacts.

Power Generation Option B – Installation of a New On-site Power Generation Facility

If suitable commercial power is not available, a new prime power-generation facility would be installed at the VMT. Preliminary conceptual design for this alternative includes multiple diesel generators with a total capacity of approximately 5 MW to meet the VMT demand and a diesel back-up. Prime diesel generators may trigger other regulatory requirements and necessary emission controls.

At this time, and if commercial terms allow, APSC's preferred option for future power supply is connection with the local utility (CVEA). However, technical studies to determine the level of power that the utility could provide have yet to be conducted. Once those studies are complete and commercial terms have been negotiated, APSC will conduct a final analysis of cost, safety, system integrity and performance, and select the power generation sub-alternative.

2.2.2 Removal of Crude Oil Storage Tanks from Service

Up to six of the 18 existing crude oil storage tanks may be taken out of service and isolated from other VMT facilities. Up to four of these tanks will be removed from the West Tank Farm, and up to two tanks

[2] 286TVP01, Valdez Power Plant; 287TVP01, Glennallen Power Plant; and 494TVP01, Cogeneration Project (routes turbine exhaust gas to Petro Star refinery).

will be removed from the East Tank Farm. Oil storage at the VMT can be reduced because of projected declines in oil production, smaller storage requirements, and changes in the size of the tanker fleet.

2.2.3 Freshwater Reservoir for Firewater Supply

The current firewater protection system at the VMT uses salt water from Port Valdez and requires three major pump systems to distribute water. Under VMT SR, a reservoir will be created in the existing quarry above the West Tank Farm to impound freshwater for firewater supply. This reservoir, which will cover approximately 6 acres, will be filled and maintained by temporary partial diversion of the flow of Sawmill Creek. Sawmill Creek is presently equipped with an existing weir gate valve and 16-inch pipeline that will be repaired and routed to the reservoir. Preliminary conceptual designs by APSC indicate that sufficient water can be stored to provide the requirements of the current firewater systems as well as the new facilities to be installed under SR (see Section 4.1.3.2). The new system will tie into the existing firewater system near the East Tank Farm via a new 24-inch-diameter buried line. A second 24-inch penetration will be available for emergency operations. The outflow from the reservoir would be through an overflow spillway located at the quarry and releasing into Unnamed Creek. Figure 2-2 shows the approximate location of the freshwater firewater reservoir. The main, east, and west diesel firewater pumps will be taken out of service (Emerald 2004).

2.3 DESCRIPTION OF NO ACTION

The no action alternative to the proposed VMT SR would consist of continued operation of the VMT in its current configuration. As described in the TAPS FEIS, maintenance and upgrades of facilities and equipment would occur only as needed to maintain safety and reliability in accordance with the Alyeska Reliability Centered Maintenance strategy.

2.4 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

The process used for considering a reasonable range of alternatives and for evaluating other reasonably foreseeable activities not included in the proposed project was a multiple step process. The steps included the public scoping meeting in Valdez, review and analysis of the scoping comments, review and analysis of the Environmental Report submitted by APSC in support of the EA, the JPO staff review of these documents, and finally, the BLM's internal scoping meeting. In the process of analyzing a range of actions, BLM considered the following options proposed by APSC. These options were not deemed appropriate to receive full environmental analysis as alternative actions in the EA for the following reasons:

- Tank Type – The range of alternatives for tank type and material composition affect the technical design aspects more than any environmental impacts. The key factor in the decision to eliminate external floating roof types was the snow loads generated in short time frames during the winter months. These loads increase the risk of sinking the external floating roof before the snow would melt and drain off. The consideration of an aluminum pan, because of lighter weight properties, was considered to minimize cost and design forces due to seismic events. The cost was found not to be as significant as the corrosion concerns from di-electric materials. Also the mass of the fluid in the tank proved to be much more significant than the weight of the pan in the seismic calculations. IFRs are the only reasonable alternative to the current fixed-roof design for crude oil storage tanks at Valdez. Aluminum composition for the floating roofs was also eliminated.

- Number and Location of Tanks to be Removed – The specific required storage capacity and subsequent number of storage tanks is tied to relief capacity for safe operations and the availability of tankers constrained either by port closures due to weather or scheduling of the tanker fleet. Relief capacity is accommodated by only two tanks and is therefore not an issue. Historically, port closures have seldom interrupted pipeline flow rates due to storage tank shortages. Analysis of which crude oil storage tanks to remove led to the current proposal to remove up to six tanks from service and isolate them. Although multiple options for the number and location of individual tanks to be removed from service are possible, none present meaningfully distinguishable environmental impacts. The proposed specific tanks to be removed provide significant advantages because they eliminate all impacts from operations at the West tank farm and provide a greater separation between tanks in the East tank farm for firefighting purposes. To accomplish the purpose of the SR, the greatest number of tanks that could be removed (6) while maintaining required storage capacity were proposed. Multiple options were eliminated because there were no meaningful or distinguishable environmental impacts while there were significant advantages to the proposed number.

- Power Supply – Utilization of a power recovery turbine (PRT) station to generate power for the VMT was considered. Installation of a PRT within the flowing crude stream of the pipeline would produce electricity and provide power for the VMT. However, power available from the PRT would vary with the throughput of the pipeline and would be zero when the pipeline is shut down. As power at the VMT is required when the pipeline is shut down, the full power requirements for the VMT must be provided by one of the two options presented in the power generation sub-alternative. The PRT could be used to provide supplemental power if it were determined to be technically and economically viable as a future VMT operations and maintenance upgrade (see Section 4.3.4.5).

- Firewater Supply – Use of tanks and storage cells was eliminated from further consideration because of economics associated with keeping the water from freezing, constant manpower associated with pump equipment, and maintenance.

- Freshwater Firewater Reservoir – Multiple water supply sources for the firewater reservoir were considered, including Sawmill Creek, Allison Creek, and Unnamed Creek as sole sources, and Sawmill Creek/Allison Creek and Sawmill Creek/Unnamed Creek as combined sources (APSC 2004c). Unnamed Creek was determined to have insufficient flow to serve as the sole water source or as a reliable auxiliary source and was eliminated from further consideration. Allison Creek is an anadromous stream and by permit stream flow cannot be drawn below 2.0 cubic feet per second (cfs). This creek currently serves as the water source for the VMT, and insufficient additional flow is available to serve as a reliable primary source for the reservoir. Allison Creek does not have existing piping as Sawmill Creek does but could serve as an auxiliary source for Sawmill Creek if water was transported via fire trucks. The more likely source for supplemental water would be the ponds associated with Dayville Creek and Unnamed Creek. This water would also be transported via fire trucks.

APSC has indicated that they are considering other future changes at the VMT. These consist of:

- Ballast Water Treatment Facility modifications;
- Relocation of the Operations Control Center to Anchorage;

- Consolidation of some VMT facilities and operations including infrastructure for equipment maintenance, warehousing, and offices; and
- Installation of ultrasonic flow meters at the East and West Metering Buildings to reduce costs.

These activities are in an early preliminary stage of engineering design and have not been officially proposed to JPO-BLM. The BLM considered whether these reasonably foreseeable activities were connected or unconnected activities to the proposed action. It was determined that they were all unconnected activities since they are neither triggered by the proposed actions nor would the proposed actions be prohibited by not doing these actions simultaneously. Each of these identified possible future actions could also be independently justified. When consideration was given to whether these actions could have cumulatively significant impacts it was believed that none of them would add to the existing accepted impacts of the TAPS operation. When considering similarities of these actions due to timing and geography it is clear that they are all within the same geography however, the timing is not considered compatible. Of greatest concern was the Ballast Water Treatment Facility (BWTF) as it could potentially represent the most significant reduction in environmental impacts. This action has been anticipated since OPA 90 was passed, which required the use of double hull tankers thus eliminating the oily ballast water from the tankers by 2015. Also the BWTF is not currently regulated by the EPA under the NESHAP rule, however, due to a petition for reconsideration to have these type of facilities regulated, the certainty of what requirements if any would affect a design related to this action is not known. These potential actions will be fully evaluated when they occur. Therefore the effects of operations, as currently permitted, are included in this EA only as part of the cumulative impact analysis (Section 4.3).

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3.0 AFFECTED ENVIRONMENT

The following sections include information regarding the environment potentially affected by the proposed VMT SR. In many instances, sections of the TAPS FEIS (BLM 2002a) remain fully applicable to the proposed action and are incorporated in this EA by reference.

3.1 GEOLOGY AND SOILS

The VMT is located on north-facing slopes of the Chugach Mountains. The region is underlain by late-Cretaceous meta-sedimentary rocks of the Valdez Group. These rocks consist of steeply dipping and thickly interbedded meta-graywacke and phyllitic argillite, with minor amounts of greenstone, arkosic sandstone, and conglomerate (Moffitt 1954). Due to glaciation, glacial till mantles the bedrock over most of the VMT. The thickness of this till, an unsorted mixture of clay to boulder-sized material, varies from 1 to 120 feet. At the upper terminal, steeper areas typically show bedrock outcrops without significant soil cover, while on less steep slopes, the soil layer is typically thin and overlays weathered bedrock. Engineered fill material was provided for construction of many VMT facilities, and soil conditions can be variable. Saturated water table conditions are generally encountered in localized man-made or natural depressions in the bedrock surface. If the bedrock surface is sloped sufficiently, groundwater may not be encountered above the bedrock surface.

3.2 SEISMICITY

Valdez is in one of the most seismically active areas in the world. Approximately 70 earthquakes of recorded or estimated magnitude of 5 or greater on the Richter scale were reported between 1898 and 1964. Five of those earthquakes generated submarine landslides. A 1964 earthquake, with a moment magnitude of 9.2 and an epicenter 45 miles west of Valdez, along the Alaska-Aleutian megathrust, triggered a submarine landslide involving nearly 100 million cubic yards of material (Coulter and Migliaccio 1966).

3.3 WATER RESOURCES

3.3.1 Marine Waters

Port Valdez is a narrow, deep (755 to 820 feet), glaciated, flat-bottomed fjord with steep rocky shores in the Chugach Mountains. The Lowe and Robe Rivers, Mineral Creek, and the Valdez Glacier Stream empty into the head of Port Valdez and have formed extensive outwash plains on the northern shore. Large amounts of fine sediments are deposited in the fjord from local streams and rivers. Hydrography and circulation in Port Valdez depend on tides, precipitation, freshwater inflows, winds, air temperatures, and mixing with the waters of Prince William Sound. Between May and October when freshwater runoff is high, salinity and temperature are generally layered. Dissolved oxygen is high all year, indicating complete replenishment. Other parameters vary with season.

3.3.1.1 Existing Water Quality

Hydrocarbons present in the waters of Port Valdez come from a number of sources, including natural background from oil seeps, oily shales, and coal; historic TAPS operations and related facilities; past anthropogenic sources, such as spills and industrial operations; ongoing TAPS operations and related

activities; and ongoing human activities not related to TAPS, such as boating, fishing, and atmospheric fallout.

In a study conducted for the Prince William Sound Regional Citizens' Advisory Council (RCAC), petroleum hydrocarbons associated with the Ballast Water Treatment Facility (BWTF) effluent were found in Port Valdez outside the mixing zone over a wide area at concentrations in the low part-per-trillion range. Plastic membrane devices and mussel tissues accumulated polycyclic aromatic hydrocarbons (PAHs) in the high part-per-billion to low part-per-million range. These low concentrations have not been associated with adverse effects in other studies where the primary route of exposure was to dissolved hydrocarbons present in true solution (RCAC 2002a). The University of Alaska Fairbanks, Institute of Marine Science (IMS) has conducted extensive environmental monitoring studies in Port Valdez under the terminal's National Pollutant Discharge Elimination System (NPDES) Permit AK-002324-8 (Feder and Shaw 1988, 1990-2000; Feder and Blanchard 1992-1995; Feder et al. 2001, 2002; Payne et al. 2002, 2003). A June 2001 Environmental Study Report presented an analysis of both current and historical data collected by the IMS (Feder et al. 2002). The EPA Fact Sheet and Technical Evaluation for reissuance of NPDES Permit AK-002324-8 summarized the results of the 2001 report and other studies in Port Valdez; selected information from the fact sheet (EPA 2004) is presented below:

- Fluctuations in the number of taxa, biomass, and abundance of benthic infauna have been observed in Port Valdez but the causes of the fluctuations are uncertain. It has been speculated that the fluctuations may be the function of changes in the organic carbon levels and unrelated to the VMT.

- Statistical analysis of the associations between benthic infauna community structure and hydrocarbon concentrations in Port Valdez sediments have demonstrated that effluent from the BWTF does not negatively affect benthic organisms in the Deep Basin and rarely influences Shallow-Shelf stations.

- Hydrocarbon concentrations in Port Valdez sediments have generally shown steady or declining values in the 1990s. Concentrations tended to decline until about 1993 and fluctuate or remain low thereafter. Hydrocarbon concentrations are lower by a factor of ten than the marine sediment quality standard developed by the State of Washington (WAC 1991); this is true even for the station closest to the outfall.

- Acute sediment tests conducted in the early 1990s using the marine amphipod *Rhepoxinius absonius* or alternative species indicated that Port Valdez sediments do not cause statistically significant mortality relative to the Heather Bay reference sediments (Karle et al. 1994).

- Tissue hydrocarbon monitoring was conducted annually using the mussel *Mytilus edulis* collected at stations in Port Valdez between 1989 and 1995. Feder and Shaw (1996) reported that the types and concentrations of hydrocarbons detected in Port Valdez mussels indicated that biogenic rather than petroleum hydrocarbons are the major contributor.

3.3.1.2 Uses

Seawater is withdrawn from Port Valdez at the Main Firewater Pump Building for use in the VMT firewater protection system when the system is tested or operated. Aside from this intermittent withdrawal, seawater is not used by VMT operations.

3.3.1.3 Discharges to Port Valdez

Water is discharged to Port Valdez from the VMT sewage treatment plant and the BWTF and are covered under NPDES Permit AK-002324-8. The EPA re-issued the VMT's NPDES permit effective August 1, 2004, and expiring July 31, 2009. The sewage treatment plant is authorized to treat and discharge up to 10,000 gallons per day (gpd) of secondary-treated effluent through a diffuser designed to achieve the mixing zones established by the NPDES permit. Discharges from the plant have consistently met permit limitations (OASIS 2004).

3.3.2 Surface Waters

The VMT is bracketed by two surface drainages, Allison Creek and Sawmill Creek. Allison Creek is an anadromous stream; this designation requires that a minimum flow of 2 cubic feet per second (cfs) be maintained in the creek to protect salmonid life stages. Sawmill Creek also supports anadromous fish. Unnamed Creek and Dayville Creek also traverse the VMT, but do not flow directly into Port Valdez, rather they discharge to infiltration ponds. Other surface drainages enter infiltration ponds on site and do not directly enter Port Valdez.

3.3.2.1 Existing Water Quality

Water quality of the two streams in the interior of the VMT, Unnamed Creek and Dayville Creek, have been assessed. Waters in the settling basins for these streams have been sampled semi-annually since 1998 and analyzed for dissolved petroleum hydrocarbons. Results have been well below the most stringent water quality standards mandated by ADEC regulations (18 AAC 70), and typically the results have been below the analytical laboratory method detection limits (OASIS 2004).

3.3.2.2 Uses

Drainage ditches on the VMT are a part of the spill control and containment system and as such have received oil from the terminal. However, no ongoing impacts to these water courses have been identified.

Surface water use at the VMT has averaged roughly 120,000 gpd, with the majority being industrial uses, such as process waters for the Power/Vapor Plant, washing down equipment such as vehicles and other equipment, and miscellaneous water uses. Potable water use is typically less than 25 gpd per person. Allison Creek is the source of most industrial and potable water for the terminal, but water is occasionally required for special purposes such as tank hydrotesting that must require additional sources. The ADNR regulates the withdrawals of water from freshwater sources to meet these occasional demands. The VMT does not use groundwater to meet its water needs.

3.3.2.3 Discharges to Surface Waters

Uncontaminated storm water from the VMT is allowed to enter the on-site water courses. Salt water used during periodic testing of the firewater system is allowed to enter these water courses although such runoff is done using best management practices identified in the terminal's NPDES permit

3.4 ATMOSPHERIC ENVIRONMENT

3.4.1 Climate and Meteorology

Climate and meteorological data for Valdez are summarized in Table 3-1.

3.4.2 Existing Air Quality

Stationary emission sources (Table 3-2), which are the largest contributor to emissions at the VMT, include power boilers, incinerators, diesel-powered generators and water pumps, storage tanks, the BWTF, and open burning (e.g., small-scale firefighter training). Mobile sources are minor contributors and include the vehicles and equipment used at the VMT. Fugitive emissions, which are also minor contributors, include road dust, dust from operations of earth-moving equipment, and leaks or programmed releases from valves or fittings.

The VMT is the largest contributor of criteria pollutant and volatile organic compound (VOC) emissions to the Valdez airshed. Hazardous air pollutants (HAPs) are included in the VOC emissions and include sources such as combustion of the displacement vapors from the vapor recovery system in the power boilers, incineration of excess vapors in the vapor incinerators, releases from crude oil storage tanks, releases from the BWTF, exhausts from combustion equipment, and leaks from various pieces of equipment. HAPs include benzene, toluene, ethylbenzene, m,p-xylene, o-xylene, and n-hexane. Table 3-3 summarizes the estimated current potential emissions of criteria pollutants and VOCs at the VMT, and Table 3-4 provides current emissions specifically for the VMT components that are subject to change form SR. "Potential emissions" refer to the maximum possible emissions calculated on the basis of maximum allowable fuel use and/or other equipment operating parameters that determine emissions. The tables also present estimated actual emissions based on current terminal operations. Actual emissions are typically significantly less than potential emissions, and that is the case at the VMT. Potential VMT emissions of HAPs total 122.9 tons per year (tpy) with benzene totaling 43 tpy, followed by toluene at 38 tpy (BLM 2002a). Similar evaluations of existing air quality have been studied by the RCAC (RCAC 2002b). Neither the EPA nor ADEC has established ambient HAP standards.

Table 3-1. Summary of Climatic and Meteorological Data at Valdez.

Parameter	Averaging Period	Value
Wind Speed (mph)	Annual Mean	6.2
	Monthly Mean, range	4.2 August, 8.2 February
Wind Direction (degrees)	Prevailing	60
Temperature (^{o}F)	Annual Mean	37.7
	Monthly mean, range	20.5 January, 54.9 July
Relative Humidity (%)	Annual Mean	77
	Monthly mean, range	72 February, 85 August
Precipitation (inches)	Annual Mean	64.04
	Monthly mean, range	3.08 June, 8.37 September
Snowfall (inches)	Annual snowfall	315.7
Heavy fog (no. of days)	Annual Mean	15.8
Thunderstorm (no. of days)	Annual Mean	1.1

Source: BLM 2002a.

Table 3-2. Stationary Air Emission Sources Permitted at the VMT.

Source	Source Description	Rating/Size	Number of Units
Power Boilers	Combustion Engineering Power Boilers	242 million btu/hr	3
Incinerators	John Zink Waste Gas Incinerators	400 million btu/hr	3
Diesel-Fired Generators	SM S-12E4 Emergency Generator	1,670 KW	1
	SS 69937 Lifeline Generator	1,050 KW	1
Diesel-Fired Firewater Pump Drivers	Cummins KTA-50C Main	1325 hp	3
	Cummins KTA-2300-FS East	763 hp	2
	Cummins KTA-2300-FS West	864 hp	2
SVE System	SVE System	920 cfm max 611 cfm design	1
Tank Bottom Processing (TBP) Equipment	Diesel Fuel/Propane-Fired Boilers, Small Tanks, Centrifuge, and Process Water	18.5 million btu/hr combined capacity for boilers 1,500 bbl/day process throughput	–
Crude Oil Tanks	East Tank Farm Crude Oil Storage Tanks	510,000 bbl each	14
	West Tank Farm Crude Oil Storage Tanks	510,000 bbl each	4
Loading Berths	Loading Berths with Vapor Collection (Berths 4 and 5)	100,000 bbl/hr	2
	Loading Berths without Vapor Collection (Berths 1 and 3)	100,000 bbl/hr	2
Other Significant Sources	Fuel Oil Tanks (55 and 56)	40,000 bbl each	2
	Fuel Oil Tanks (53 and 54)	3,000 bbl each	2
	Fuel Oil Tanks (Emergency Response)	15,000 gallons	2
	Recovered Crude Oil Tanks (BWT 80s Tanks)	36,000 bbl each	2
	BWT Tanks (90s Tanks)	430,000 bbl each	3
	BTTs	5,500,000 gallons each	2
	Air Strippers (West BTT)	20,000 cfm each	2
	Air Strippers (East BTT)	20,000 cfm each	2
	Dissolved Air Flotation Tanks	5,800 gal/min each	6
	Dissolved Air Flotation Effluent Channel	30 million gpd	1

Key:

bbl = barrel; BTT = Biological Treatment Tank; btu/hr = British Thermal Unit per hour; BWT = Ballast Water Treatment; cfm = cubic feet per minute; gal = gallon; hp = horsepower; hr = hour; KW = kilowatt; lb/hr = pound per hour; min = minute; SVE = Soil vapor extraction.

Source: OASIS 2004.

Table 3-3. Estimated Potential and Actual Emissions of Criteria Pollutants and VOCs from the VMT.

Criteria Pollutant	Potential Emissions[a] (tpy)	Actual Emissions[d] (tpy)
SO_2	1,757	118.1
NOx	1,578	325.1
CO	137	114.6
PM_{10}	278	74.8
Pb	—[b]	—[b]
VOCs	3,464[c]	1,300

Key:

CO = Carbon monoxide; NOx = Nitrogen oxide; Pb = Lead; PM_{10} = Particulate matter sized 10 micrometers and less; SO_2 = Sulfur dioxide; tpy = Tons per year; VOC = Volatile organic compound.

Notes:

a Norton 2001b.
b Amount emitted is estimated to be negligible.
c Thomas 2002.
d APSC 2004b.

Source: OASIS 2004.

Table 3-4. Actual Emissions of Criteria Pollutants and VOCs from VMT Components Subject to Change with the Proposed Action.

Pollutant	Source	2002 Actual (tpy)	2003 Actual (tpy)	Average Actual (tpy)	Total of Averages (tpy)
NOx	Power Boilers	156.3	157	156.65	276.3
	Waste Gas Incinerators	119.6	113.8	116.7	
	Firewater Pumps	2.5	2.3	2.4	
	Emergency Generators	0.5	0.5	0.5	
CO	Power Boilers	64.6	64.2	64.4	114.6
	Waste Gas Incinerators	50.8	48.2	49.5	
	Firewater Pumps	0.67	0.57	0.62	
	Emergency Generators	0.13	0.12	0.125	
PM-10	Power Boilers	7.6	7.9	7.75	74.9
	Waste Gas Incinerators	66	68.1	67.05	
	Firewater Pumps	0.044	0.055	0.0495	
	Emergency Generators	0.009	0.008	0.0085	
SO_2	Power Boilers	63.7	73.1	68.4	98.6
	Waste Gas Incinerators	29.5	30.1	29.8	
	Firewater Pumps	0.3	0.33	0.315	
	Emergency Generators	0.06	0.05	0.055	

Table 3-4. Actual Emissions of Criteria Pollutants and VOCs from VMT Components Subject to Change with the Proposed Action (Cont'd).

Pollutant	Source	2002 Actual (tpy)	2003 Actual (tpy)	Average Actual (tpy)	Total of Averages (tpy)
VOC	Power Boilers	182.5	182.8	182.65	422.8
	Waste Gas Incinerators	30	29	29.5	
	Firewater Pumps	0.067	0.057	0.062	
	Emergency Generators	0.014	0.012	0.013	
	18 Crude Oil Tanks	See Note	See Note	210.6	

Note:

The crude oil storage tanks' emissions were determined using Tanks 4.0 to establish the uncontrolled emission rate from each tank with the following major inputs: 1) The 916,507 barrels per day average throughput was divided equally among each of the 18 tanks; and 2) the material modeled was crude oil with RVP7. These uncontrolled emissions were then reduced by 99% on the basis of an approximate 50/50 split between the boilers and incinerators. The incinerators were assumed to reduce the vapors delivered by 99.7% based on 1998 source testing, and the boilers were conservatively assumed to reduce the vapors by 98.5% based on an exhaustive EPA literature review.

For convenience, the crude oil storage tank emissions were calculated only once using the average throughput of the years 2002 and 2003. If the calculations were performed for the individual years instead, it would not change the results.

Source: APSC 2005.

In the 1992-93 timeframe, the total estimated VOC emissions from the VMT were estimated to be in the range of 50,000 tpy. With installation of the tanker vapor recovery system, the current VMT total VOC emissions are estimated to be about 1,300 tpy, a reduction of more than 97 percent from the 1992-93 period (Thomas 2004a).

For assessment of potential impacts from TAPS-associated emissions, the TAPS FEIS presented risk calculations that were conducted on the basis of ambient HAPs levels for the Valdez area reported in the Valdez Air Health Study (Goldstein et al. 1992). Data on ambient concentrations of six HAPs collected at four monitoring sites in the Valdez area were obtained during a 1-year period (November 1990 through October 1991) when the TAPS average crude oil throughput was about 1.8 million bbl per day and before the installation of the tanker vapor recovery system at VMT in March 1998.

The TAPS FEIS assessment evaluated the potential health risks from exposures for the period 2004 through 2033 (30 years of exposure). For the residential area risk, a "baseline" risk was added to account for exposures that have occurred since the start of pipeline operations through 2003 (27 years). The hypothetical worst-case assessment used ambient levels at the VMT fenceline (although no people currently reside at that location), and the assessment for residential exposures used ambient levels measured in Valdez residential areas. No baseline risk was added for the worst-case assessment because residential exposures at the fenceline have not occurred to date. The three assumed operational throughput values (i.e., 0.3, 1.1, and 2.1 million bbl/d) were used to scale assumed ambient concentrations from the levels observed at the time of the Valdez Air Health Study (when throughput was 1.8 million bbl/d). A summary of the assessment results is given in Table 3-5.

Table 3-5. Potential Human Health Risks Associated with Inhalation of Hazardous Air Pollutants in Valdez Area Ambient Air.[a]

Parameter	Risk, by Pipeline Throughput Level (10^6 bbl/d)		
	0.3	**1.1**	**2.1**
Cancer Risks[b]			
Residential area exposure[c]	3.0×10^{-5} (3.0×10^{-6})	3.1×10^{-5} (3.1×10^{-6})	3.2×10^{-5} (3.2×10^{-6})
Hypothetical worst-case Exposure (fenceline)	1.2×10^{-5}	4.1×10^{-5}	8.6×10^{-5}
Hazard Index[d] (noncancer hazards)			
Residential area exposure[c]	0.05 (0.005)	0.05 (0.005)	0.05 (0.005)
Hypothetical worst-case exposure (fenceline)	0.07	0.22	0.46

Notes:

a Risks were estimated for a 154-lb (70-kg) adult exposed daily. Pollutants included in the risk assessment were benzene (the only carcinogen), ethylbenzene, n-hexane, toluene, and xylene. Pollutant concentrations are 1991 data from Goldstein et al. (1992); values were scaled to the various assumed pipeline throughput levels.

b Risks between 10^{-6} and 10^{-4} are generally considered below the level of concern.

c Exposures in residential area of Valdez, based on 1991 ambient VOC concentrations. For residential cancer risks, a baseline risk of 1.5×10^{-5} from 27 years of exposure (1977-2003) was added to the risk from exposure during the proposed action period of 30 years (2004-2033). Values in parentheses represent the approximate risk and hazard index contribution (i.e., less than 10%) from the VMT (based on 1991 ambient VOC concentrations before installation of a vapor-collection system in 1998). Since installation, the VMT VOC emissions have decreased by a factor of more than 10, thereby further decreasing the terminal's contribution to ambient VOC levels.

d A hazard index of <1 means adverse health impacts are unlikely.

Source: BLM 2002a.

On the basis of a tracer study, the Valdez Air Health Study estimated that VMT emissions only contributed up to about 10 percent of the residential area HAP levels; the other 90 percent was likely from use of home heating fuels and household solvents (BLM 2002a). Therefore, only 10 percent of the measured residential area ambient HAP concentrations were scaled with assumed change in throughput; the 90 percent attributable to other sources was assumed to remain constant throughout the assessment period. No noncancer adverse health impacts to members of the general public would be expected from inhalation of TAPS-associated emissions during the renewal period. Also, at Valdez residential locations and for all assumed throughputs, the increased lifetime cancer risk would be essentially the same and within risk levels generally not requiring mitigating actions (EPA 1990). The levels and risks are essentially the same because the predominant source of ambient VOC levels in the residential area was found not to be the VMT. For the VMT fenceline location, ambient levels and potential cancer risks were less than the EPA's level of concern of 1×10^{-4} for all assumed throughputs. In addition, for the worst-case fenceline assessment, it is unlikely that a member of the general public would be exposed to benzene at the fenceline concentration for prolonged periods; currently no one resides that close to the VMT.

The vapor collection system installed in 1998 on two of the four tanker berths at the VMT decreased VOC emissions by a factor of more than 10. The other two tanker berths are no longer used. Therefore, current VMT-attributable benzene concentrations (and associated health risks) would be expected to be much lower than those measured in the Valdez Air Health Study because of the reduced emission levels.

Other pollutant emissions from the VMT include ozone-depleting substances and greenhouse gases. Several ozone-depleting substances are currently used at the terminal, including Halon and Freon. Halon 1301 is used for explosion protection and fire suppression in the Emergency Response Building, while Freon is used in some refrigerant-containing equipment. Currently about 1,260 pounds of Halon 1301 (Carlton pers. comm.) and 120 pounds of Freon (Thomas 2004a) are in use or storage at the VMT. Six releases of ozone-depleting substances totaling 1,900 pounds have occurred in the last 3 years (2001, 2002, and 2003) due to accidental releases and not actual fire events (Anderson 2004). Combustion of fossil fuels for VMT operations results in emissions of CO_2, a greenhouse gas. Total annual CO_2 emissions at the VMT are estimated to be 200,000 tpy as carbon (Thomas 2004a).

3.5 NOISE

Background noise in the Valdez area is generally quite low, with road and aircraft the most significant sources. The VMT is the only other major noise source with the highest levels emanating from the power/vapor operations; VMT noise is generally not audible beyond the site boundary. There are no residences or other noise-sensitive receptors within 2 miles of the VMT site; the City of Valdez is the nearest residential community, approximately 4 miles to the north across Port Valdez. There are no barriers to affect noise transmission between the VMT and the community. There are no adopted regulations governing noise in the VMT site area.

3.6 TERRESTRIAL VEGETATION AND WETLANDS

Section 3.18.3 of the TAPS FEIS provides a comprehensive identification of terrestrial vegetation and wetlands in the area of Prince William Sound, including Port Valdez and the VMT. During initial construction, much of the VMT was cleared of typical coastal forest vegetation except for isolated stands of Sitka spruce (*Picea sitchensis*). Today, alder (*Alnus* species) communities dominate the terminal and cover most open areas that have been left to revegetate after initial construction. Cutting of the alder is a general maintenance activity to prevent the species from encroaching on roads and between buildings, and to help remove hiding places for large mammals, primarily black bears. Alder is also cut in drainage ditches and in areas where access would be needed for spill response.

Wetlands occur sporadically along the shoreline of Port Valdez and include estuarine intertidal flats, intertidal emergent persistent and beach/bar wetlands, palustrine scrub/shrub wetland, and emergent persistent wetlands. The estuarine intertidal flats and beach/bar wetlands are the most common wetland type. There are also isolated local wetlands adjacent to the VMT.

3.7 FISH

Section 3.19.1 of the TAPS FEIS provides a comprehensive identification of fish resources located near the VMT. Unnamed Creek and Dayville Creek, which flow through the center of the VMT, do not contain any fish. Allison and Sawmill Creeks support populations of pink (*Onchorhynchus gorbuscha*) and chum (*Onchorhynchus keta*) salmon (APSC 1997). Pink salmon is the more numerous species, and both species spawn near the mouth of the creek. Sawmill Creek was used as an Alaska Department of Fish and Game (ADF&G) index stream in the 1970s, at which time annual pink salmon counts ranged from 2,400 to 4,400 fish with even years having the higher returns. Chum salmon counts during this period were generally just under 1,000 fish (Alyeska Geographic Resource Database). During a recent survey (JPO 2004a), a total of 1,650 pink salmon were observed in Sawmill Creek, although a total number of 2,000

fish were estimated after applying a degree of error for the in-stream turbidity (JPO 2004a). In addition to these pink salmon, two chinook salmon were also noted in the survey, "guarding a redd." The pink salmon were apparently restricted by velocity barriers (small waterfalls) to the tidal portion of the stream (Gnath 2004a).

Adult salmon return to spawn during July and August, with the pink salmon returning first. Pink salmon fry out-migration begins in April followed by chum salmon. The life cycles of the fish differ slightly in that pink salmon fry do not spend any time in fresh water; they emerge from the gravel and immediately migrate to the ocean. However, chum salmon fry generally spend a few months in fresh water feeding on small insects before forming schools and migrating to the ocean.

3.7.1 Essential Fish Habitat

The North Pacific Fishery Management Council has prepared fishery management plans that designate EFH in Alaska. As addressed in greater detail in Section 3.19 of the TAPS FEIS and in the associated Essential Fish Habitat Assessment (BLM 2002b), EFH for salmon fisheries in the Exclusive Economic Zone off the coast of Alaska, groundfish of the Gulf of Alaska, and scallop fisheries off Alaska are relevant to the full breadth of TAPS operations, including the VMT. Information regarding EFH within the TAPS action area is detailed in both Section 3.19.1 of the TAPS FEIS and the EFH Assessment.

Designated EFH for salmon fisheries in Alaska includes all estuarine and marine areas used by Pacific salmon of Alaska origin. The designated habitat would extend from the area of tidal influence in stream habitat and tidally submerged habitats to the oceanic limits of the Economic Exclusion Zone for the United States (North Pacific Fishery Management Council 1998). The lower reaches of Sawmill Creek constitute EFH in areas of pink and chum salmon habitat.

3.8 MARINE MAMMALS

Section 3.22 of the TAPS FEIS provides a comprehensive identification of marine mammal resources located near the VMT. Nine species of marine mammals are abundant or common in Prince William Sound. These include sea otters (*Enhydra lutris*), harbor seals (*Phoca vitulina*), killer whales (*Orcinus orca*), Steller sea lions (*Eumetopias jubatus*), and humpback whales (*Megaptera novaeangliae*).

3.9 BIRDS

Section 3.20.3 of the TAPS FEIS provides a comprehensive identification of bird resources near the VMT. Over 200 species of birds inhabit the North Gulf Coast–Prince William Sound region, including passerines, raptors, shorebirds, and waterbirds (Isleib and Kessel 1992), and this area is important to birds for both migration and breeding (TAPS Owners 2001; Anderson 2002). Some of the more abundant species in the vicinity of the VMT include gulls (mew and glaucous-winged), black-legged kittiwakes, goldeneyes, and the northwestern crow. Commonly seen seabirds include scoters, pigeon guillemots, and murres. Several pairs of black oystercatchers have been observed nesting on exposed gravel areas within the boundaries of the VMT, and black-legged kittiwakes nest on the tanker berths (Koszarek pers. comm.).

3.10 TERRESTRIAL MAMMALS

Section 3.21 in the TAPS FEIS provides a comprehensive identification of terrestrial mammals in the TAPS operations area, including the VMT. The terrestrial mammals inhabiting the VMT range in size from small microtines to bears. Of particular note are bears due to their potential for human/bear interaction. Both black and brown bears (*Arctos americanus* and *Ursus arctos,* respectively) are seen each year on the VMT. Brown bears are usually a casual visitor and just travel through the area, but black bears are prevalent in the area. The terminal is part of the home range of black bears, likely due to the abundant salmon resources readily available just adjacent to the terminal in Allison and Sawmill Creeks.

Problem bears are rare on the terminal but have been known to occur. APSC maintains a program to train all employees how to act in the presence of bears. Other mammals seen in the VMT area include marmots (*marmota caligata*), Sitka black-tailed deer (*Odocoileus hemionus sitkensis*), red fox (*Vulpes fulva*), and coyote (*Canis latrans*).

3.11 THREATENED AND ENDANGERED SPECIES

Section 3.22 of the TAPS FEIS provides a comprehensive identification of threatened and endangered species in Prince William Sound, including Port Valdez and the VMT. While no federally listed threatened or endangered species or their designated critical habitats are known to occur within the VMT, Prince William Sound does support several marine mammals that are listed under the Endangered Species Act (ESA). The Steller sea lion (*Eumetopias jubatus*: endangered), humpback whale (*Megaptera novaeangliae*: endangered), and fin whale (*Balaenoptera physalus*: endangered) occur in Prince William Sound. Both the Steller sea lion and humpback whale have been occasionally observed in Port Valdez.

There are an estimated 3,500 to 4,000 Steller sea lions in and near Prince William Sound (Merrick et al. 1991). Designated critical habitat for the Steller sea lion includes haulout areas in Prince William Sound; but none of these critical habitat areas occur within Port Valdez.

Humpback whales are probably the most abundant whales in Prince William Sound, and 60 to 100 individuals feed there during the summer (von Ziegesar et al. 1994). In a 3-year study of humpback whales in Prince William Sound, von Ziegesar et al. (1994) found whales primarily in Knight Island Passage, the southern end of Chenega Island, and the entrances of Icy and Whale Bays. These areas are all in the southwestern portion of Prince William Sound and away from the VMT.

Fin whales occur in deep water portions of Prince William Sound for a few days each year from April to June during their summer migration to their Bering Sea feeding grounds (Hall 1979). Their distribution in Prince William Sound appears to be limited to the area near the Hinchinbrook Entrance.

Steller's eiders (*Polysticta stelleri*: threatened) spend most of the year in shallow, nearshore marine waters where they feed by diving and dabbling for benthic organisms (USFWS 1999). A few Steller's eiders winter in portions of Prince William Sound; including Port Valdez (see USFWS consultation letter attached in Appendix A).

The State of Alaska maintains lists of endangered species and species of special concern from the State's perspective. Four Alaskan species of special concern may occur along the TAPS: the olive-sided flycatcher, the gray-cheeked thrush, Townsend's warbler, and the blackpoll warbler. However, there are

no known observations of any of these birds on the VMT, and based on the species accounts in Isleib and Kessel (1992), none of these birds is likely to nest at the VMT or migrate through the area.

3.12 ECONOMY AND SOCIAL SYSTEMS

Sections 3.23 and 3.25 of the TAPS FEIS provide a comprehensive discussion of the existing economics and sociocultural systems within the TAPS operations area, including the VMT. As emphasized in the TAPS FEIS, the economic and social effects of the TAPS are inextricably interconnected with North Slope oil production and marine transportation, which provide important benefits to the State of Alaska and the Nation, as well as related fiscal benefits at the state and local levels.

3.12.1 Economics

The economic systems relevant to TAPS operations are detailed in Section 3.23 of the TAPS FEIS, which discusses the relationship between TAPS operations, including the VMT, and world oil prices, national economic issues (i.e., domestic oil prices and national energy security, the balance of trade and federal tax revenues); state, local and village economic issues (i.e., population, gross state product, employment and unemployment, personal income, state and local revenues and expenditures, and public services); subsistence; and Alaska Native corporations.

The VMT is located adjacent to the community of Valdez, which is situated within the Valdez-Cordova census area. A total of 106 industry sectors are represented in the Valdez-Cordova census area, which reflects less economic diversity than found in the larger Alaska communities such as Anchorage (216 sectors) and Fairbanks (166 sectors), but is notably broad for small communities such as Valdez and Cordova (MIG 2001). The resident population in Valdez currently accounts for approximately 40 percent of the population of the Valdez-Cordova census area, which had an estimated 2003 population of 10,230 (U.S. Census Bureau 2004).

Valdez has experienced several economic boom cycles that have resulted in significant economic changes to the community. As a year-round ice-free port, Valdez was the original gateway to the interior of Alaska. Until supplanted by the Alaska Railroad, Valdez served as a transportation hub via a road that eventually became today's Richardson Highway (BLM 2002a). The construction of the TAPS pipeline and marine terminal, beginning in 1973, and the *Exxon Valdez* oil spill of 1989 are two additional important events that created short-term spikes in local economic activity. Today, transportation remains a primary economic sector in Valdez, and includes both pipeline transportation and a cargo and container shipping facility. Commercial fishing, tourism, and government employment are also significant factors in the local economy. In 2002, the top ten employers in Valdez were APSC, the City of Valdez, Valdez City Schools, Peter Pan Seafoods, Inc., TCC LLC, Safeway, Inc., Connecting Ties, Inc., University of Alaska, Valdez Regional Health Authority, and Ocean Beauty Seafoods, Inc. (ADOL 2003).

In 2003, the City of Valdez collected over $20 million in total property taxes, with 65 percent of this amount generated from TAPS (including VMT) properties (Northern Economics 2004). Slightly more than $7 million of the total came from local taxes on other property. This value includes approximately $5 million in revenue from the city's property tax on vessels greater than 95 feet in length (including tankers).

3.12.2 Sociocultural Systems

Section 3.25 of the TAPS FEIS includes a detailed description of the sociocultural systems of selected groups of indigenous people of Alaska and of non-Native rural Alaskans within the action area affected by TAPS operations, including the VMT. This section includes a description of sociocultural systems and issues common to Native Alaskans, and also identifies distinctions by sociocultural affiliation and village divided among four geographic areas. The Prince William Sound and Lower Cook Inlet area encompasses the location of the VMT. Using the same regional areas, the TAPS FEIS also identifies non-Native rural Alaskan communities and sociocultural systems; however, Valdez is not included in this discussion because its population exceeds the 2,500 cut-off used by the U.S. Bureau of Census to define rural communities.

3.13 SUBSISTENCE

Section 810 of the Alaska National Interest Lands Conservation Act requires that an evaluation of subsistence uses and effects be completed. Subsistence uses in the vicinity of the VMT are documented for the communities of Tatitlek, Valdez, Chenega Bay, and Cordova (BLM 2002a; Fall and Utermohle 1995; Stratton 1989, 1990, 1992). These uses predate and postdate the *Exxon Valdez* oil spill of 1989. Resources harvested by these communities include eulachon (smelt), all species of salmon, seals, sea lions, crab, gumboots, some terrestrial mammals, and a variety of plants (BLM 2002a; Fall and Utermohle 1995, 1999; Fall et al. 2001; Stratton 1989, 1990, 1992; Stratton and Chisum 1986; Stratton et al. 1996). Migratory waterfowl, terrestrial mammals, anadromous fish, and fish that spawn in nearshore waters such as herring (*Clupea harengus*) and eulachon may use the area of the VMT and could be affected or perceived to be affected by activities taking place on site.

For the communities of Chenega Bay and Tatitlek, the most harvested subsistence resource groups are fish (salmon and non-salmon) and marine mammals, and for the communities of Cordova and Valdez, the most harvested subsistence resource groups are fish (salmon and non-salmon) and large land mammals.

The subsistence use areas for these communities are widespread, including areas around each community and other traditionally used locations. While there are limited data depicting harvest amounts by location specific to Valdez Arm, documented use for this area exists. For example, Tatitlek subsistence areas include several parts of Prince William Sound in the immediate vicinity of the VMT (BLM 2002a). Valdez residents reported use of the Port Valdez for subsistence harvests of shellfish, fish, and birds; however, these residents reported decreased use following the *Exxon Valdez* oil spill due to the reduced presence of resources in the area and residents' perceptions regarding contamination of the resources (Fall and Utermohle 1995).

3.14 ENVIRONMENTAL JUSTICE

See Section 3.29 of the TAPS FEIS (BLM 2002a) for a detailed discussion on environmental justice applicable to the VMT. Comparing Valdez with the rest of Alaska, the 2000 Census indicated that Valdez had lower percentages of every identified racial or ethnic minority population than did Alaska as a whole. For example, American Indians and native Alaskans made up 7.2 percent of Valdez' population but 15.6 percent of the total Alaska population (BLM 2002a). Median family income was higher in Valdez than in the state, and the unemployment rate was 5.0 percent for Valdez compared with 6.7 percent for the state as a whole (BLM 2002a).

3.15 CULTURAL RESOURCES

Cultural resources in the vicinity of the VMT include a number of prehistoric and historic sites (AHRS 2004). No all-encompassing cultural resource survey has been conducted in the area of the VMT, and no known prehistoric resources are located at the VMT (AHRS 2004; Wooley 1994). A prehistoric midden at the mouth of the Lowe River was reported, but it is presumed to have been submerged by tectonic effects of the 1964 earthquake (AHRS 2004). The VMT location encompasses two known historic sites: Fort Liscum and Dayville. Fort Liscum was an Army base from 1900 to 1925, when the Army closed the base and either sold the buildings or left them to decay (AHRS 2004; Brown 1975). No surface evidence of the Fort Liscum structures remains, but associated deposits such as middens and latrine pits, which could hold significant historical period deposits, have not been located or examined by archaeologists. The Day family bought many of the Fort Liscum buildings, homesteaded and prospected at the former Army base location, and founded Dayville in 1929 at the site, which included a salmon cannery, a sawmill, a school and a store, parts of which may remain in place (AHRS 2004; Wooley 1994).

The TAPS, including the pipeline and associated facilities such as the VMT, may qualify for inclusion on the National Register of Historic Places under criterion A for its contribution on state and national levels to industry and oil exploration and under criterion C for its importance in engineering, the Historic American Building Survey, and the Historic American Engineering Record (BLM 2002a).

3.16 LAND USE, COASTAL ZONE MANAGEMENT, RECREATION, AND VISUAL RESOURCES

3.16.1 Land Use and Land Ownership

The VMT is located on approximately 1,000 acres of land owned in fee simple by the TAPS Owners. The VMT is located within the corporate limits of the City of Valdez. Surrounding lands are in mixed ownership with federal, state, and private landowners near the VMT.

The City of Valdez Comprehensive Plan provides guidance for use of private lands in the city. The State of Alaska has adopted the Prince William Sound Area Plan for state lands in the area, which surround three sides of Prince William Sound. The BLM Glennallen Field Office is in the process of developing the East Alaska Resource Management Plan for federal lands in the Tiekel Planning Region, which are scattered through the area north of Valdez. A revision to the Land & Resource Management Plan for the Chugach National Forest has been prepared and is awaiting a Record of Decision to begin implementation. The Chugach surrounds the area within about 2 miles of the VMT site to the south.

Several Conservation System Units have been designated near the VMT, including: Sawmill Bay State Marine Park – 18 miles to the west; Shoup Bay State Marine Park – 8 miles northwest; Jack Bay State Marine Park – 15 miles south; and Chugach National Forest – ¼ mile southwest

3.16.2 Coastal Zone Management

The VMT is located within the boundaries of the Valdez Coastal Management Plan (CMP) district. Activities that occur within the coastal district must be consistent with the Valdez CMP and with statewide Alaska Coastal Management Program (ACMP) requirements. The Valdez plan allows for a variety of development activities but gives a higher priority to activities that are water-related and/or water-dependent.

Consistency reviews are conducted on proposed activities (including SR) and existing projects within the coastal zone to determine whether activities comply with the Coastal Zone Management (CZM) standards. The ADNR has reviewed the proposed action and determined that an ACMP consistency review is not required as long as certain conditions are met as the project is eligible for a General Concurrence

3.16.3 Recreation

There are many recreational opportunities in the Valdez area, most of which are oriented to the outdoors. During the summer, the area provides numerous activities for residents and visitors including rafting, sea kayaking, mountain biking, backpacking, hunting, sport fishing, canoeing, sightseeing, and wildlife viewing of both marine and terrestrial creatures. Photography, ocean cruises, and glacier viewing are also popular. In winter months, snowmobiling and back country skiing are leading activities. The latter includes helicopter and snowcat skiing and snowboarding, and telemark and cross country skiing, attracting visitors from around the world. Ice climbing on frozen waterfalls is another premier winter activity in the Valdez region. Recreational areas near the community include the Wrangell-St. Elias National Park and Preserve, some 55 miles to the east; the Chugach National Forest; and Prince William Sound, including the marine parks noted above. Museums and theater offer other types of recreational activities for Valdez residents and visitors. There are no designated wilderness areas in the Valdez vicinity.

3.16.4 Visual Resources

The VMT is the dominant visual feature on the south side of Port Valdez. Buildings, structures, berths, and tankers are visible from the City of Valdez and most other locations within Port Valdez. The terminal clearly shows as a large industrial facility. Federal Grant stipulations required that visual impacts be minimized to the extent possible during original construction of the VMT.

There are many outstanding visual resources in the Valdez area, ranging from the mountains surrounding Thompson Pass and the drive through Keystone Canyon on the Richardson Highway coming into Valdez, to the waterscapes and viewsheds of islands, fjords, and glaciers on Prince William Sound. Outside of the urban area of Valdez, much of the region is pristine and undeveloped, providing beautiful views of this portion of Southcentral Alaska.

3.17 TRANSPORTATION

3.17.1 Aviation Systems

The State of Alaska owns and maintains the Valdez Pioneer Field airport that provides an important transportation link for Valdez residents and businesses. The airport has a 6,500-foot paved runway that accommodates commuter air carriers, air taxis, general aviation, and military flights.

3.17.2 Marine Systems

Valdez has well-developed maritime infrastructure and services to support interstate and international cargo shipments and receipts. In addition, the Port Valdez is an ice-free port with a minimum draft of 20 feet that provides access to interior Alaska, the Pacific Northwest states, northern Canada, and Pacific Rim countries. The Alaska Marine Highway System provides ferry service between Valdez, Cordova,

Whittier, and Seward. The system will inaugurate fast ferry service in Prince William Sound in 2005, which is expected to substantially improve service and reduce travel times for residents of Valdez and other Prince William Sound communities (Alaska Marine Highway System 2004).

3.17.3 Highway and Road Systems

The Richardson Highway, an asphalt-paved two-lane road, connects Valdez with the continental highway network. Old Dayville Road connects the VMT with the Richardson Highway at Milepost 2.9 and is the only road access to the terminal.

3.18 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

The TAPS Environmental Protection Manual: Pollution Prevention, Waste Management, and Used Oil, EN-43-006 describes controls to identify hazardous waste generated and to assure compliance with regulatory requirements. EN-43-006 established APSC standards for containerization and labeling of hazardous waste, storage of hazardous waste at designated satellite areas and central accumulation areas, inspection and recordkeeping for accumulation areas, training and emergency preparedness requirements, and pickup and transportation of hazardous waste to permitted disposal facilities.

3.18.1 Hazardous Material Usage

Storage of hazardous materials occurs at a number of areas on the VMT. Table 3-6 summarizes the March 2004 Emergency Planning and Community Right-to-Know Act (EPCRA) Tier II report on the amount of hazardous materials present at the VMT in amounts above threshold planning quantities. Other than crude oil, diesel fuel is the most abundant hazardous material at the terminal, with up to 3.3 million gallons in storage tanks.

3.18.2 Hazardous Waste

Hazardous wastes are generated from operations and maintenance activities at the VMT (Table 3-7). Satellite and central accumulation areas are provided at locations around the terminal for the initial storing of hazardous waste in proper containers. Hazardous wastes are periodically collected from storage locations by the APSC waste management contractor and delivered to a permitted treatment, storage, and disposal (TSD) facility in the Lower 48 States. Transportation is generally by truck, rail, and barge.

The VMT is classified as a “large quantity generator” of hazardous waste under EPA rules (i.e., it generates more than 2,200 pounds of hazardous waste per month). The largest quantity of hazardous waste generated at the terminal has been solids associated with cleaning crude-oil storage tanks (tank bottoms). Tank bottoms and “materials in process” that are periodically removed from equipment and bulk crude-oil storage tanks often exhibit a hazardous waste characteristic, typically benzene. In 2003, tank bottoms were processed to remove oil, which was returned to the crude oil system. Another significant volume of hazardous waste comes from pigging waste — waxes, paraffin, and oily solids collected from scraper pigs used for cleaning the pipeline. A variety of other hazardous wastes are generated from routine operations and maintenance activities, including spent thinners and cleaning solvents, flammable paints and coatings, corrosive acids, flammable adhesives, spent coolants and filters, spent aerosol cans, and fluorescent light bulbs.

Table 3-6. Hazardous Materials at the VMT above Threshold Planning Quantities.

Hazardous Material	Maximum Daily Amount Present (pounds)	Average Daily Amount Present (pounds)	Principal Hazard
Corrosion Inhibitor	9,800	9,800	F, I
Gasoline	7,000	7,000	F, I, D
Ethylene Glycol	280,000	280,000	I, D
Diesel Fuel	24,000,000	24,000,000	I, D
Fluoroprotein Foam (National)	510,000	510,000	I
Aero-o-lite – 3% AFFF	366,000	366,000	I
Carbon Dioxide	5,280	5,280	S
Hydraulic Oil/Lube Oils	85,000	60,000	F, I
Sodium Hydroxide	159,000	159,000	R, I
Crude Oil	180,027,750	180,027,750	F, I, D
Sulfuric Acid	60,000	60,000	R, I
Bionutrient 2170	220,000	106,000	I
Cleartron ZB-258	108,000	108,000	I

Key:

F = Fire, S = Sudden Release of Pressure, R = Reactivity, I = Immediate (acute), D = Delayed (chronic).

Source: APSC Tier II report (APSC 2004a).

Table 3-7. Hazardous Waste Quantities Generated at the VMT (in pounds) 2001-2003.

	2001	2002	2003
Hazardous Waste – Other than Tank Bottoms	319,862	409,444	113,909
Tank Bottoms	3,960,000	211,961	9,500
TOTAL	4,279,862	621,405	123,409

Source: OASIS 2004.

3.18.3 Solid Waste

Non-hazardous solid waste generated at the VMT can generally be classified as domestic solid waste and industrial solid waste. Domestic solid waste includes office and food waste, while industrial solid waste includes non-hazardous oily solid waste, construction/demolition wastes, incinerator ash, empty drums and containers, and non-hazardous spent filters.

Bags of non-hazardous oily solid wastes (oily sorbents, rags, containers, etc.) have previously been collected for burning at the solid waste incinerator building in the Power/Vapor Plant area. The incinerator ash was tested twice per year to confirm that it was non-hazardous and was disposed of at the City of Valdez municipal landfill. However, the incinerator closed in September 2004 as a result of air

quality regulations (40 CFR 62, Commercial and Industrial Solid Waste Incinerator), so that oily solid waste is now containerized and shipped off site for disposal.

Domestic solid waste is collected in dumpsters and periodically hauled to the City of Valdez baler prior to disposal at the baler cell in the landfill, while construction/demolition debris is collected in dumpsters and periodically hauled to the City of Valdez construction debris landfill. Based on the number of dumpsters and weekly pickup schedule for the VMT, approximately 1,000,000 pounds of solid waste were disposed of annually in the Valdez landfills (OASIS 2004).

3.18.4 Used Oil

Used oil is stored at several locations at the VMT and is periodically tested for chlorinated hydrocarbons. Used oil that meets TAPS injection criteria is injected in the crude stream at East Metering, while oil that does not meet the criteria is shipped off site for energy recovery or disposal at a TSD facility. Controls are in place to assure that used oil is not contaminated with chlorinated hydrocarbons since these compounds could make used oil a hazardous waste or could interfere with processes at the downstream oil refineries receiving Alaska North Slope crude.

3.18.5 Contaminated Soil

Contaminated soil excavated from spill sites is hauled to a contaminated soil stockpile at the VMT. The stockpile is managed in accordance with a plan approved by ADEC. The contaminated soil is periodically thermally remediated by a permitted mobile soil incinerator brought to the terminal, or the soil is transported off site to an approved soil incinerator.

The volume of contaminated soils typically stockpiled at the terminal awaiting remediation varies depending on the number and magnitude of spill events as well as the circumstantial factors at spill sites that govern subsequent remediation. Amounts of contaminated soils stockpiled at the VMT have ranged from 237.4 tons in 1996 to 1,561.9 tons in 2001.

According to ADEC, there are a total of 23 contaminated sites resulting from spills at the VMT. Thirteen sites are presently being assessed, monitored, or remediated; five have been closed; and five sites are categorized as “no further remedial action planned.” The Power/Vapor Plant area is the only high-priority contaminated site APSC has identified on the VMT. Contamination at the site is from a historic spill that impacts area soils and groundwater. A soil vapor extraction (SVE) system to remediate the site has been operating since 1999.

3.18.6 Pollution Prevention and Recycling

A pollution prevention program has been established under the Best Management Practices (BMP) Plan, Ballast Water Treatment Facility, Alyeska Marine Terminal, MP-69-1 (APSC 2003b). In addition, recycling programs have been established for a number of waste streams at the VMT, including scrap metals, aluminum cans, copy machine toner cartridges, non-hazardous spent sandblasting and grit, wood, office furniture, office paper, and newspaper. The extent to which each product is recycled at any given time depends on the recycled product market, as well as other factors. Scrap metals represent the largest quantity of recycled products at the VMT, with quantities recycled in the last 3 years of 1,409,897 pounds in 2001; 792,560 pounds in 2002; and 735,560 pounds in 2003 (OASIS 2004).

3.18.7 Wastewater

Domestic sanitary and industrial wastewaters are generated at the VMT. APSC operates a sanitary waste treatment plant for the terminal and the BWTF to treat tanker ballast water, various other industrial wastewaters, and storm-water runoff. Treated wastewaters from these facilities are discharged to Prince William Sound.

There are also four septic tanks, three leach fields, and several holding tanks on the VMT for handling domestic wastewaters. The septic tanks are pumped annually, and the septic tank solids are hauled to the City of Valdez sewage treatment plant for treatment and disposal.

3.19 CRITICAL ELEMENTS NOT AFFECTED

Critical elements of the human environment are subject to requirements specified in statute, regulation, or executive order and must be considered in all BLM EAs. However, 6 of the 15 critical elements are not relevant to Alaska or the VMT. These non-relevant critical elements include Areas of Critical Environmental Concern, Farm Lands, Floodplains, Native American Religious Concerns, Wild and Scenic Rivers, and Wilderness.

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 PROPOSED RECONFIGURATION

4.1.1 Geology and Soils

Surface and subsurface soils will be disturbed as a result of construction activities such as installation of new combustors and power facilities (backup or prime generators, substation), and work on the firewater supply system (reservoir/dam and supply line construction). These disturbances are expected to be small in area, contained on the existing industrial site, and of short duration. With the exception of some proposed activities associated with the firewater supply system, these activities will take place in areas of previously disturbed soils or fill material and have negligible environmental impact.

Construction of the firewater reservoir at the quarry will require that some material be removed from the quarry. This material will be used to construct the dam and other necessary control structures. It is anticipated that the 24-inch firewater supply pipeline will be buried 10 feet below grade along its entire length from the firewater reservoir to the tie-in location at the northwest corner of the East Tank Farm. From the quarry, the pipe routing will extend down the toe of the avalanche berm, turn east towards the East Tank Farm along the roadway, and extend south along the East Tank Farm roadway. No impact concerns have been identified. Some sections of the existing 16-inch water supply pipeline between Sawmill Creek and the proposed reservoir will require repair to bring it into service, and some new line will need to be installed. This 16-inch supply line traverses approximately 300 yards of previously undisturbed ground; however, this pipeline is above ground and should result in little if any disturbance to soils or geology.

Soils could be contaminated by spills of oil and/or chemicals; however, SR is intended to reduce the size and complexity of the VMT infrastructure, thereby reducing spill potential.

Installation of an on-site power generation facility and purchase of commercial power would have similar environmental impacts. Both options would involve some disturbance of soils and subsoils during construction (power plant and substation), but the impact to the local geology and soils would be negligible and of short duration.

There would be no long-term impacts to geology or soils caused by the new and/or modified equipment and facilities installed during SR.

4.1.2 Seismicity

Seismicity effects on IFRs, the firewater reservoir, and other VMT facilities constructed as part of SR have been evaluated during conceptual engineering and the development of design criteria (Nyman and Honegger 2003). Any new installation (e.g., vapor combustion units) will be designed to meet TAPS seismic design criteria.

The most significant potential environmental impact appears to be the release of hydrocarbon vapors as a result of the behavior of an IFR when subjected to moderate to strong earthquake shaking. Without adequate engineering controls, IFRs may become “hung” or “racked” on the interior supports due to extreme sloshing of crude oil and/or the edges of the roof may become jammed against the tank due to

tank wall deformation. If not properly bonded, the potential also exists that metal-to-metal contact might occur during sloshing and cause a spark that ignites vapors. It is believed that some storage tank fires involving floating roofs have been caused by this type of behavior in past earthquakes at other facilities (TCI 2003). The limited data on the occurrence of fires due to spark generation during earthquake shaking appears to be largely limited to highly volatile products (such as naphtha) as opposed to crude oil. The design and construction of the IFRs will address these seismic issues. As a mitigation measure, the performance and integrity of the IFRs could be monitored, including documentation of the frequency of internal roof movements and the number of times the roof hits the tank floor.

The potential for significant damage to the firewater reservoir is considered unlikely during a major seismic event. The earthen dam to be used for controlling water flow is proposed to be situated in a narrow gully that has stable bedrock sides (Golder 2003). The most likely impact during a major seismic event would be the short-term overflow of clean water from the reservoir due to shake-generated waves. The overflowing water would spill into the existing drainage for Unnamed Creek. In addition, there are no facilities below the firewater reservoir that would be significantly impacted by a catastrophic release of water from the reservoir.

4.1.3 Water Resources

Impacts to groundwater or surface freshwater quantity or quality or seawater quality could result from the operation of the reconfigured VMT, as discussed in the following subsections.

4.1.3.1 Groundwater

Studies were conducted to verify that the existing walls and floor of the quarry are adequate to hold water without excessive seepage or instabilities. The quality of the rock mass in the quarry is apparently relatively high with tight joints, limited zones of broken rock, and little or no apparent rockfall along the quarry's steep rock wall; however, there is likely to be small but minor leaks along joints and fractures (Golder 2003). It is unlikely that use of the quarry as a firewater reservoir would affect slope stability/ groundwater issues at the VMT, therefore no impacts to groundwater quantity are expected. As a mitigation measure, new piezometers could be installed prior to firewater reservoir construction, and information from these new piezometers, as well as those already installed along adjacent slopes, should provide sufficient data to monitor slope stability and to indicate whether any changes in water pressure on the slope are due to filling the quarry with water (Emerald 2004).

Groundwater quality could potentially be impacted by spills of oils and/or hazardous chemicals; however, SR is intended to reduce the size and complexity of the VMT infrastructure (e.g., reduced number of crude oil and chemical storage tanks), thereby reducing spill potential. No impacts to groundwater quality are expected.

4.1.3.2 Surface Water

There will be a short-term increase in water demand associated with SR construction activities. The existing water source is, and the main source for water required during construction would be, Allison Creek. Use of Allison Creek waters by the VMT is currently restricted by ADNR permit so that flows cannot be reduced by withdrawal to less than 2.0 cfs as measured at the water intake. Therefore no significant impacts are expected to Allison Creek. However, if the existing water appropriation for

Allison Creek is not adequate to satisfy the temporary water demand, while preserving the necessary flow rate in Allison Creek, it may be necessary to withdraw water from other sources, such as Sawmill Creek.

Development and use of the new freshwater firewater reservoir would also result in an initial demand of approximately 12.6 million gallons of fresh water and periodic demand of roughly 3.15 million gallons to offset water used for fire system testing and evaporation. The largest demand for firewater from the reservoir would be the approximately 3.8 million gallons that could be needed to fight a full surface fire in a crude oil storage tank (Hughes 2004). The second scenario analyzed was a rim seal fire in a crude oil storage tank with a floating roof; the demand for firewater to fight a fire in the second scenario would be approximately 3.4 million gallons (Hughes 2004). Based on a full surface fire and incorporating safety factors, the recommended volume of the firewater reservoir was 7.7 million gallons (Hughes 2004). The planned reservoir volume was calculated to be 15.8 million gallons, which exceeds the firewater design requirements by 8.1 million gallons. The methodology used to arrive at the reservoir volume was reviewed by the Alaska State Fire Marshals Office.

The proposed source of water for initial filling and replenishing of the firewater reservoir (after a major fire) or for adding normal makeup waters is Sawmill Creek. Sawmill Creek was used as a water source during original VMT construction, and the diversion structure and piping are in place. Sawmill Creek occasionally experiences periods of low flow so that withdrawal of large volumes of water at high rates could impact the stream. Potential impacts will be mitigated by restricting water withdrawal as follows: 1) when stream flow is greater than 10.0 cfs, the withdrawal rate may be up to 3.0 cfs; 2) when stream flow is from 5.0 to 10.0 cfs, the withdrawal rate may not exceed 0.7 cfs; and 3) when stream flow is less than 5.0 cfs, no withdrawals may occur. Based on these limitations, no adverse impacts on water resources would be anticipated as a result of the potential for a short-term increase in water use. APSC has received the required permit from ADNR for these water withdrawals that incorporates these limitations.

Over the long term, the number of employees at the VMT, and therefore potable water use, will be reduced by as much as half. There would also be a substantial reduction in industrial water use associated with removal of the Power/Vapor Plant from service. Because the source of this water is Allison Creek, reconfiguration will reduce water use from roughly 120,000 gpd to roughly 60,000 gpd in the long term, a net positive or beneficial impact to surface water resources.

With the elimination of the saltwater firewater system for the upland VMT area, the runoff of salt water to Unnamed Creek, Dayville Creek, and other surface drainages during periodic system testing would be eliminated. While there have been no apparent impacts associated with the discharge of seawater to these freshwater streams and drainages, the elimination of this salt water should provide a positive effect on the water quality in these water courses.

Neither installation of an on-site power generation facility nor purchase of commercial power (and installation of an on-site substation) would be expected to have any impacts on groundwater or surface water quantity or quality.

4.1.3.3 Marine Waters

The primary concern for impacts to marine waters from the operation of the VMT is from spills to the ocean. With the reduction in the numbers of tanks and associated facilities, there would be less risk of spills to marine waters.

There would be a temporary increase in discharges into the Industrial Wastewater Sewer System and a temporary increase in influent flows to the BWTF. If these flows are above existing allowable influent flows, the BMP Plan, Ballast Water Treatment Facility – Alyeska Marine Terminal, MP-69-1 (APSC 2003b) would need to be modified. However, because the BWTF is operating well under capacity, no adverse impacts to the facility from this short-term effect would be expected.

In the long term, discharges into the Industrial Wastewater Sewer System and the BWTF would be reduced. Uncontaminated storm water from former crude oil storage tank containment areas and other clean areas could be routed for discharge to land and surface drainages rather than discharging into the Industrial Wastewater Sewer System. Discharges of scrubber water, boiler blowdown, and knockout water from the Power/Vapor Plant would be eliminated. These changes could reduce BWTF influent flows by up to 630,000 gallons (15,000 bbl) per day (OASIS 2004).

It is expected that the BWTF effluent flow and pollutants discharged would decrease because of lower influent contributions from VMT sources and lower ballast-water flows from tankers. Potential long-term reductions in effluent characteristics have not been predicted.

4.1.4 Air Quality

Short-term increases in fugitive dust could occur during installation of new equipment associated with VMT reconfiguration. Construction activities and an increase in vehicle traffic to support construction personnel would generate dust, but impacts are expected to be minor. Fugitive dust could be mitigated by watering roads and disturbed areas as needed. The increase in construction personnel would also likely cause short-term increases in other air pollutants, including increased emissions from fuel combustion for vehicles, portable power generators, and portable heaters. Emissions from these sources would be mitigated by using properly operated and maintained equipment. No lasting impacts on air quality are expected.

For the long term, total VOC emissions would be reduced by more than 177.1 tpy due to removal of six crude oil storage tanks from service and conversion of remaining tanks to IFRs (Table 4-1). The IFR emissions are based on preliminary projections and may be subject to change based on the results of subsequent engineering.

Operation of the reconfigured VMT with fewer emission sources would result in reduced long-term air emissions for several pollutant categories. Table 4-2 compares current actual air emissions from the VMT with predicted air emissions from the VMT following SR under both power supply options. Under the proposed action, HAP emissions would be reduced to about one-third the current levels. Reductions for emissions of most pollutants are predicted for either power supply option with the exceptions of CO and an increase in SO_2 if on-site diesel generators are installed for primary power. However, if commercial power is purchased from an off-site utility, operation and/or modification of the utility's equipment could increase air emissions at the generating location, offsetting the decrease in emissions from VMT sources. Data that would allow this determination are not available.

The above estimates are based on preliminary engineering and could be revised based on final design engineering and JPO review. If on-site diesel electric generators are used for primary power, they will be installed with controls to meet the MACT for Reciprocating Internal Combustion Engines. APSC is proposing to install a meteorological tower and pollutant monitoring station at the VMT to provide data

for a Prevention of Significant Deterioration (PSD) permit application in the event that a PSD trigger threshold is exceeded. The pollutant monitoring station would measure NOx, CO, and SO_2.

No degradation of air quality in the Valdez area would be expected as a result of the changes in VMT air emissions following SR. VMT emissions of CO_2, an unregulated greenhouse gas, would be reduced by up to 150,000 tpy (OASIS 2004). Installation of IFRs in crude oil storage tanks would also alleviate the need for incinerating an estimated 500 to 700 bbls per day of oil collected in the existing tank vapor control system. This oil would be available for loading on tankers after installation of the IFRs.

Table 4-1. Current and Projected Tank Emissions at the VMT (before and after SR).

	VOC Emissions per Tank (tpy)	Total VOC Tank Emissions (tpy)	Total VOC Fugitive Emissions (tpy)[3]	Total VOC Emissions (tpy)
Current Tank Emissions with Vapor Recovery	11.7[1]	210.1	13.9	235.7
Projected IFR Tank Emissions	4.8[2]	57.6	1.0	58.6

Key:

IFR = Internal Floating Roof; tpy = Tons per year; VMT = Valdez Marine Terminal; VOC = Volatile organic compound.

Notes:

1 This amount is calculated by dividing the current daily VMT throughput and emissions equally among the 18 existing cone roof crude oil storage tanks and reducing the emissions by 99% (efficiency of the Power/Vapor Plant incinerators).

2 Total emissions are based upon the use of 12 floating roof tanks and an average daily throughput of 0.916 million bbls/day divided equally among the tanks.

3 Under the current system, the total fugitive emissions (tpy) occur in the tank farm and power house areas. About 1 tpy of fugitive emissions would be expected after conversion to IFR tanks. Tank venting emissions are not factored into these numbers since they result from upset conditions. After the installation of IFRs, the potential for tank venting is virtually eliminated as the tank vapor space above the crude in the tank is eliminated.

Source: APSC 2004b.

There is insufficient information to completely evaluate potential air quality impacts associated with the power generation sub-alternative option A (commercial power supplied by CVEA); however, increased CO emissions will likely result from either power supply option. This increase (see Table 4-2) has been estimated to be 3.7 tpy or about 3 percent for the commercial power option and 32.6 tpy or about 28 percent for the on-site power plant. SO_2 emissions are expected to decrease by 85.3 tpy (86 percent) under the commercial power option but increase by 23.3 tpy (24 percent) under the on-site power generation option. Emissions of all other criteria pollutants would decrease under either power supply option, and either option would result in a large reduction of total emissions. Emissions of $PM_{2.5}$ are also expected to decrease, regardless of power generation option, based on the accepted (EPA 1997) use of PM_{10} as a surrogate measurement. All other emissions are estimated to decrease under either option. Total overall air emissions are estimated to decrease by 115,252 tpy (60 percent) under the on-site power option and 151,416 tpy (80 percent) under the commercial power option. Potential human health risks are currently at levels below concern (see Section 3.4.2). Given the estimated reduction in overall air emissions, including HAPs and PM_{10}/$PM_{2.5}$, potential human health risk levels are expected to decrease further after completion of the proposed action.

Table 4-2. Comparison of Air Emissions from VMT Components Subject to Change with the Proposed Action.

Pollutant	Source	Predicted Emissions After SR				Current Emissions Total[a] (tpy)
		Commercial Power		On-Site Power		
		Source (tpy)	Total (tpy)	Source (tpy)	Total (tpy)	
NOx	Vapor Combustors	137.3	152.2	137.3	190.4	276.3
	Primary Generators	N/A		51.2		
	New Boilers	1.9		1.9		
	Emergency Generator	13		N/A		
CO	Vapor Combustors	114.8	118.3	114.8	147.2	114.6
	Primary Generators	N/A		31.9		
	New Boilers	0.5		0.5		
	Emergency Generator	3		N/A		
PM-10	Vapor Combustors	9.6	10.2	9.6	19.3	74.9
	Primary Generators	N/A		9.5		
	New Boilers	0.2		0.2		
	Emergency Generator	0.4		N/A		
SO_2	Vapor Combustors	2.4	13.3	2.4	121.9	98.6
	Primary Generators	N/A		113		
	New Boilers	6.5		6.5		
	Emergency Generator	4.4		N/A		
VOC	Vapor Combustors	187	246.0	187	256.5	422.8
	Primary Generators	N/A		10.8		
	New Boilers	0.1		0.1		
	Emergency Generator	0.3		N/A		
	12 Crude Oil Tanks	58.6		58.6		
CO_2[b]	All Sources	38,284		74,253		190,240

Notes:

a Average of annual emissions for 2002-2003.

b CO_2 is not a regulated pollutant but is reported here because it is a greenhouse gas (OASIS 2004).

Key:

N/A = Not applicable.

tpy = tons per year

Source: APSC 2005.

4.1.5 Noise

Implementation of the VMT SR would generate short-term increases in noise levels due to demolition and construction activities. While noise emission levels from these sources would occasionally be high, they

would be of short duration and would not likely be obtrusive at any of the residences or other sensitive receptors in the vicinity, all of which are at least 4 miles from the VMT site.

Decommissioning the Power/Vapor Plant would eliminate the source of the highest noise levels from current operations at the VMT. However, if suitable commercial power is not available to replace the power currently provided by the Power/Vapor Plant, multiple diesel generators would be installed to generate prime power. No data are available regarding noise emissions from these diesel generators, so noise effects cannot be accurately estimated. The 4-mile distance to the nearest sensitive receptor should be sufficient to prevent significant adverse noise effects.

The on-site power generation alternative would result in less of a reduction in noise from existing conditions than purchase of commercial power; however, neither installation of an on-site power generation facility nor purchase of commercial power (and installation of an on-site substation) would be expected to have any significant impacts on noise.

4.1.6 Terrestrial Vegetation, Wetlands, and Riparian Zones

Potential impacts to terrestrial vegetation are greatest from oil and/or chemical spills that could occur as a result of increased construction activities during SR. Spilled substances could be toxic to the plants, or the cleanup activities may disturb large areas. SR will reduce the potential for spills by removing from service crude oil and chemical storage tanks and their associated valves and piping.

A small amount of vegetation will be removed at the quarry site during construction of the firewater reservoir, altering the drainage pattern for the quarry area. The size of the reservoir will be approximately 6 acres, and the area is sparsely vegetated with alders that have become established since construction of the quarry. Wetland areas along the shoreline of Port Valdez are sporadic and scattered. National Wetlands Inventory (NWI) maps indicate there are no wetlands on the VMT, however wetlands may exist at any presently undeveloped location. Because of the scarce amount of wetlands within the area, it is unlikely that any wetlands will be disturbed. Installation of the new vapor combustors will require clearing of less than an acre of previously disturbed land that now has some vegetation. Potential and accidental impacts to wetlands could be mitigated by conducting wetland delineations prior to any ground-disturbing activities on previously undisturbed ground. Potential wetland impacts could also be mitigated by the installation of silt fences or other pollution control devices prior to such activities.

Neither installation of an on-site power generation facility nor purchase of commercial power (and installation of an on-site substation) would be expected to have any significant impacts on terrestrial vegetation, wetlands, or riparian zones.

4.1.7 Fish

No impacts to fish resources are expected from the proposed changes to VMT facilities and operations, except that modification of the VMT firewater system will entail the temporary diversion of water from Sawmill Creek. Both pink and chum salmon spawn in the lower reaches of Sawmill Creek, and chum salmon likely spend several months rearing in the lower creek before migrating to the ocean. Based on a hydrograph provided by ADNR (Gnath 2004b), flow in Sawmill Creek appears to average about 5 to 15 cfs in the winter months and about 60 to 80 cfs during summer months. Depending on the quantity of water diverted and the timing of any diversion from Sawmill Creek, a reduction of water flow upstream

could impact rearing or spawning salmon by altering or eliminating downstream habitat. A partial diversion of the stream during salmon spawning could potentially reduce spawning areas by reducing the wetted perimeter of the stream and elevate salinity levels in the intertidal region. Pink salmon are considered particularly vulnerable to contamination from the VMT and from oil spills, such as the *Exxon Valdez* oil spill, in Prince William Sound because a large portion of the wild population spawns in the intertidal region of the spawning streams (Noerenberg 1963; Helle et al. 1964; Helle 1970).

Silt could be generated during construction work at the firewater reservoir and could enter the Sawmill Creek drainage. Impacts, if any, would be short term and minor. Mitigation measures to control silt could include silt fences or other control devices, and the work could be done during the period with the least opportunity to impact fish.

As discussed in Section 4.3.16.1 of the TAPS FEIS, permits are required under Title 16 of the Alaska Statutes for activities in or near fish streams that could affect anadromous fish and their freshwater habitat, or the free and efficient migration of resident fish. (In 2004, jurisdiction of Title 16 permitting was passed from ADF&G to ADNR under Title 41 of the Alaska Statutes). Water Use Permits from ADNR are required for authorization to withdraw water from streams as proposed. APSC has submitted applications for both of these permits for the use of Sawmill Creek water and both permits have been received. During discussions with agency biologists, water withdrawal limitations were developed. Water withdrawals would not be permitted when stream flow is 5 cfs or less.

Based on existing regulatory requirements and TAPS Stipulation 2.5.3.1, the potential effects of temporary water diversions on fish are expected to be minimized and mitigated by the above-referenced conservation measures. SR is not expected to affect fish resources in Port Valdez.

4.1.7.1 Essential Fish Habitat

EFH consultation with NOAA Fisheries regarding the broader TAPS right-of-way (ROW) reauthorization was completed in 2002 and included preparation of an EFH Assessment (BLM 2002b). The EFH Assessment concluded that reauthorization of TAPS may result in short-term adverse effects to essential habitat for salmon and Gulf of Alaska groundfish. However, the EFH Assessment also concluded that these effects would be adequately minimized by the associated conservation measures, therefore there would be no significant adverse effects to EFH. Section 4.3.16.1 of the TAPS FEIS and the related administrative record document National Marine Fisheries Service (NMFS) concurrence in this finding.

The proposed VMT SR modifications fall within the range of activities anticipated in the TAPS FEIS and the related EFH consultation. Accordingly, the findings of the EFH Assessment and TAPS FEIS remain applicable for this EA. Two supplemental considerations are also relevant. First, and most relevant, because the proposed action reduces the spill risk potential from the VMT, potential adverse effects to EFH are lessened from the level identified in the TAPS FEIS and EFH Assessment. Second, modification of the VMT firewater system will entail temporary diversion of water from Sawmill Creek. The lower reaches of Sawmill Creek are EFH for pink and chum salmon, and depending on the quantity of water diverted and the timing of the diversion from Sawmill Creek, EFH alteration or loss could result unless mitigated. However, based on the existing regulatory requirements, Stipulation 2.5.3.1, and the water withdrawal restrictions identified in Section 4.1.2.2, the potential effects of temporary water diversions on EFH are expected to be adequately minimized.

Neither installation of an on-site power generation facility nor purchase of commercial power (and installation of an on-site substation) would be expected to have any significant impacts on fish, fish resources, or EFH.

4.1.8 Marine Mammals

Marine mammals that frequent the VMT marine waters are acclimated to VMT operations. SR is not expected to affect marine mammals as all activities would take place on land. Removal of crude oil storage tanks from service would reduce the potential for oil to reach Port Valdez and affect marine mammals.

Neither installation of an on-site power generation facility nor purchase of commercial power (and installation of an on-site substation) would be expected to have any significant impacts on marine mammals.

4.1.9 Birds

Environmental consequences to birds as a result of VMT SR could include disturbance or destruction of nesting and roosting habitat as a result of the removal of structures and the installation of electrical power lines, disturbance of nesting as a result of noise, and mortality of birds as a result of collisions with power lines and new buildings.

Birds nest on several of the structures at the VMT. SR should have little impact on the birds unless these nesting/roosting facilities are removed. Should birds establish their nests prior to the commencement of SR activities, and if these activities could disturb or remove an active nest, the Migratory Bird Treaty Act protects the birds until they have finished nesting.

The proposed vapor combustors are approximately 70 feet tall, and while the structures themselves should not impact bird habitat, they might be potential collision sources. In addition, if the vapor combustors are located in the open field presently used for some bird nesting (Oasis 2004), this area may not be suitable for nesting after the vapor combustors start operating, as noise levels from combustors can deter nesting birds. For example, Canada geese have been shown to avoid nesting sites near noise sources (Anderson et al. 1992). However, significant alternative nesting habitats are available in the VMT and Valdez area, and most species (including Canada geese) do become habituated to these noises (Anderson et al. 1992).

As long as good garbage management is practiced at the VMT, there should not be increases in the populations of bird predators.

While the operations described above may affect individual birds, they are not likely to affect bird populations. VMT SR will decrease the risk of a large oil spill, and this will reduce the risk of impacts to birds from oiling.

Neither installation of an on-site power generation facility nor purchase of commercial power (and installation of an on-site substation) would be expected to have any significant impacts on birds.

4.1.10 Terrestrial Mammals

No significant impacts are expected to terrestrial mammals as a result of SR. Short-term increases in wildlife interactions could occur during SR construction activities, when the employee population on the VMT would be higher. However, APSC provides extensive wildlife interaction and avoidance training for APSC and contractor employees that work on the VMT. Bears are the biggest concern because they represent the greatest potential harm to humans and property and because problem bears are sometimes killed. After SR, there would be less chance of human/bear encounters because there would be fewer people on the VMT. Because of facility changes, there would be less garbage produced that could attract bears if improperly handled (a rare occurrence on the VMT). The same garbage handling procedures currently in place would remain in effect, including color-coded bags and daily pickup.

Short-term increases in roadkills could occur during construction activities related to reconfiguration but would be minor. The reduced workforce associated with SR should result in a reduction in traffic and less opportunity for such impacts in the long term.

Current operation of the VMT does not obstruct movements of large animals, and the addition of the new firewater reservoir is not expected to change this. The VMT would remain a large industrial complex after SR. Mammals adapted to life in the vicinity of the VMT would continue to use the same territories after SR. Short-term disturbance of mammals could occur during construction activities related to SR but would be minor. After SR, the reduced risk of a large oil spill would reduce the risk of impacts to terrestrial mammals from oiling.

Neither installation of an on-site power generation facility nor purchase of commercial power (and installation of an on-site substation) would be expected to have any significant impacts on terrestrial mammals.

4.1.11 Threatened and Endangered Species

No federally listed threatened or endangered species, or designated critical habitat, occur within the VMT. Moreover, as documented in the TAPS Environmental Report (TAPS Owners 2001), FEIS (BLM 2002a), and the USFWS Biological Assessment (USFWS 2002), no evidence indicates that the TAPS as a whole has adversely affected endangered or threatened species or critical habitat during its nearly three decades of operation.

In 2002, the NMFS and USFWS concurred that continuing routine operations of TAPS, including continued operation of the VMT and ongoing operations and maintenance changes such as the proposed VMT SR, are not likely to adversely affect the Steller's eider, Steller sea lion, humpback whale, fin whale, or critical habitat. On the basis of the description of the proposed VMT SR, the status of the species in the action area, and the analysis contained in the TAPS Biological Assessment, no impact to federally listed threatened or endangered species, or federally designated critical habitat, would likely occur. Nor would any adverse impact to State of Alaska listed endangered species or to species of special concern likely occur.

Neither installation of an on-site power generation facility nor purchase of commercial power (and installation of an on-site substation) would be expected to have any significant impacts on threatened and endangered species.

4.1.12 Land Use

The proposed SR would not change the historic land use of the VMT. Because of this, and because no conflicts have been identified between the VMT and existing land uses or existing land use plans, it is not expected that the reconfiguration would interfere with adjacent land uses. No effects on conservation units in Port Valdez have been identified.

The State of Alaska has concluded upon review that a coastal zone consistency review will not be required. The proposed action has been found consistent with the ACMP and Valdez CMP, and the land use would remain essentially the same so no conflicts related to coastal management plans would be anticipated.

Neither installation of an on-site power generation facility nor purchase of commercial power (and installation of an on-site substation) would be expected to have any significant impacts on land use.

4.1.13 Economy and Social Systems

4.1.13.1 Economics

Short-Term Effects

The proposed VMT SR would be expected to create direct employment in the Valdez area from construction and demolition activities during the initial construction and modification stage anticipated to begin in 2005. The jobs would be expected to be primarily construction related, although the number and particular types of new positions have not been estimated at this time. Some of this new employment would utilize non-resident workers. Local spending by these construction/demolition workers would produce additional economic activity in the area, including income for local businesses. Theoretically, this increased economic activity would create additional local jobs, although the short-term nature of the activity would provide only short-term local benefits.

Long-Term Effects

Proposed SR activities would cause a phased redistribution and reduction of the workforce at the VMT. APSC has not determined the exact number of jobs that would be eliminated at the VMT; however, over the long term, the proposed action is expected to significantly reduce APSC's workforce in the Valdez area. Any such reduction would affect employment in related employment sectors. For example, VMT-related travel expenditures would likely be reduced, with potential impacts to the travel and accommodations sector. In addition, contractor positions for such tasks as security, janitorial, catering, computer, and technical support of VMT operations may be reduced. If power for the VMT is purchased from a local utility, there may be some potential offsetting gains in employment at local power facilities, but any such increases would likely be very minor.

Initially, a reduction in VMT employment would result in an increase in the unemployment rate, which is currently slightly above the statewide average rate. Subsequently, it is expected that workers and their families would move out of the local area in search of new employment, as there are no known plans for new employment opportunities equal to the expected VMT reductions. APSC has announced that the VMT employment schedule will change from rural to urban. Therefore, some of the employees that

presently live outside of Valdez would have to move to Valdez, off setting some of the projected population loss.

The direct elimination of jobs at the VMT may have other direct and indirect effects on the local economy and population. A reduction in VMT employment could result in a reduction in personal income. Local purchases by VMT operations and employees, and consumer spending generally, would decline over the long term. Demand for goods and services would decline at restaurants, grocery stores, hotels, shops, and gasoline stations.

The population in Valdez would be expected to decline because of the departures of employees redeployed elsewhere by APSC or otherwise displaced by reduced employment at VMT and at support industries and local service sector jobs. The population reduction would, of course, include family members in addition to displaced workers. A decline in population would likely result in decreased demand for houses, which would cause downward pressure on prices for local residential properties.

As noted, APSC does not yet have an estimate of the anticipated reduction in employment. Outside estimates of 350 fewer workers have been suggested (Revis 2004). The *Anchorage Daily News* reported October 7, 2004, that elimination of jobs in Valdez will have repercussions that extend beyond the terminal, and the impact of the job losses would be felt between 2005 and 2007 according to an APSC internal report released to APSC workers September 2004. The *Anchorage Daily News* stated the report did not contain specific numbers, but stated Alyeska has not determined how many jobs would be eliminated at the VMT. Approximately 10 percent of VMT workers do not reside in Valdez (Northern Economics 2004). Assuming the high end of the range and taking into account the percent of nonresident workers, 315 fewer jobs could result in a Valdez population reduction of 838 people or more (at 2.66 persons per family per U.S. Census Bureau 2000). This would equal approximately 7.6 percent of the current population of the Valdez-Cordova census area. There will be additional indirect job losses. It is estimated that approximately 1.25 jobs will be lost for every $1 million-dollar reduction in local consumer spending (Northern Economics 2004).

It is too early to quantitatively estimate the effects of the VMT SR on local government revenues at this time. In 2003, the City of Valdez received $20.26 million in property tax revenues. Consistent with the past 5 years, 65 percent of this amount was derived from oil and gas properties. Slightly more than $7 million of the total came from local taxes on other property, and this value includes approximately $5 million in revenue from the city's property tax on vessels greater than 95 feet in length (including tankers). Depreciation of the VMT has reduced property tax revenues over time. The proposed SR would eliminate certain facilities from service and could eventually result in the demolition and removal of tanks and other structures that would further reduce the value of the VMT property. In addition, reduced value of homes and commercial properties due to related declines in population and general economic activity would further reduce the local property tax base, which provides the largest share of local government revenues.

While a reduction in population would reduce demands for some local public services, it could also create inefficiencies in the provision of services that are scaled for the current demand levels. An example of this is the new hospital, which was built to accommodate current population levels and was planned for operation with current revenue levels (Dengel 2004).

Countering the potential adverse effects of the proposed VMT SR on employment, population, local economic activity, and local government revenues, the new and modified facilities at VMT could lengthen the economic life of the VMT and TAPS. APSC has not provided estimates of the effects on the life of the TAPS system, but an extension would have long-term benefits for the Valdez community. Installation of an on-site power generation facility would likely have less impact on the economy than purchase of commercial power (and installation of an on-site substation) as some number of jobs would be required to operate the new facility.

4.1.13.2 Social Systems

As detailed in Section 4.3.21 of the TAPS FEIS, the overall impact of TAPS operations on social systems is expected to be small and slightly negative. The proposed VMT SR, as derivative actions of TAPS operations, would not alter the social systems impacts analysis summarized in the TAPS FEIS. Valdez is neither a predominately Native community nor a rural community. Social systems of Native Alaskans and of non-Native rural Alaskans would remain similar to those identified in the TAPS FEIS. Although the local short-term economic effects would be positive, the local long-term economic effects could be adverse from a net reduction in employment, decreased income, and a decrease in the population of Valdez. As the adverse economic effects phase in over time, it would be expected that there would be social disruptions due to increased pressures on families whose employment and primary sources of income would be lost. Such disruptions could include increased family conflict and increased demand for public social agency assistance.

4.1.14 Subsistence

The proposed VMT SR could have some effects on subsistence uses and harvest activities. Subsistence users from Valdez and Tatitlek have been documented using the area near the VMT (BLM 2002a; Fall et al. 1996). Tatitlek use areas for salmon occur in the vicinity of the VMT (BLM 2002a). One potential effect could include decreased short-term access and availability of subsistence resources from the VMT area due to perceived or actual contamination resulting from the demobilization or removal of some of the structures and facilities. However, the removal or demobilization of some structures may result in lower noise levels and fewer visual impediments on shore that could result in increased availability of subsistence resources and access to the VMT area. In addition, VMT SR should reduce the chances for oil spills through simplification of operations and potential removal of facilities, and thus reduce the potential impacts to subsistence resources.

The transition from pumped salt water to a freshwater reservoir could affect subsistence resource availability during filling episodes if sufficient water is withdrawn from Sawmill Creek to decrease spawning success of pink or chum salmon through a reduction or alteration of spawning habitat. Restrictions on withdrawal rates would appear to avoid such potential impacts. Once the reservoir is filled, an increase in available habitat for freshwater fish and migratory waterfowl could occur, providing a net benefit for subsistence resource availability.

The BLM has conducted an analysis of subsistence impacts associated with the proposed action under requirements of Section 810 of ANILCA (attached in Appendix B) and concluded that the effects of SR on subsistence uses fall below the level of significantly restricting subsistence uses and needs. They further state that SR would not substantially reduce subsistence resource populations or their availability

to subsistence users and would not substantially limit access by subsistence users to resources. Neither power supply alternative will impact subsistence or social systems.

4.1.15 Environmental Justice

No high or disproportionate impacts on minority or low-income populations have been identified as a result of the proposed VMT SR project. Accordingly, environmental justice considerations do not require further assessment.

4.1.16 Cultural Resources

Any ground-disturbing activities undertaken on previously undisturbed ground at the site of the VMT could affect documented, as well as undocumented, prehistoric and historic cultural resources. Two historic sites are located within the VMT area (Fort Liscum and Dayville), and remains from these sites may occur at the VMT site (AHRS 2004; Brown 1975; Wooley 1994). In addition, a determination of eligibility for inclusion on the National Register of Historic Places (NRHP) has yet to be conducted for the TAPS, including the pipeline and associated facilities such as the VMT. It is noted that modifying the structure and design elements of the VMT could impact the documentation required to support a nomination to the NRHP, the Historic American Building Survey (HABS), or the Historic American Engineering Record (HAER). Potential impacts could be minimized if at least one complete set of drawings and specifications is maintained for the existing facilities being modified or eliminated to support a determination of eligibility decision should a nomination be appropriate in the future.

Potential impacts would be minimized as a result of adherence to state and federal regulations that would require identification of, as well as determination of NRHP eligibility for, cultural resources in the project area prior to the new undertaking. If new land is disturbed, APSC is required under the Stipulation 1.9.1 of the Federal Grant to consult with an archaeologist before any ground-disturbing activities in areas that have not been modified by previous TAPS-related activities. Under Stipulation 1.9.2, notification is also required if previously unrecorded archaeological or historical resources are encountered. Potential impacts to cultural resources could be further minimized and mitigated by seeking clearance from the SHPO prior to any such activities.

4.1.17 Recreational and Visual Resources

Implementation of the proposed VMT SR would not cause any substantive adverse effects on recreation resources in the vicinity. The proposed removal of VMT facilities would reduce the degree of visual contrast between the industrial character of the VMT and the natural landscape in the area. There would be short-term negative effects to the aesthetics of the site during removal of facilities and shortly afterward. However, reducing the number of industrial facilities, especially the large, high-contrast, crude oil storage tanks, would improve the visual environment over the long term. The change would be apparent to casual observers, but the net effect would be minor because most of the facilities of the VMT would remain. The VMT would continue to be the dominant visual feature on the south side of Port Valdez.

Neither installation of an on-site power generation facility nor purchase of commercial power (and installation of an on-site substation) would be expected to have any significant impacts on recreational or visual resources.

4.1.18 Transportation

Transportation effects of the proposed VMT SR would vary, depending on the mode. In general, it is expected that the employment base at VMT would be somewhat smaller, by an as yet undetermined amount, which would lead to a smaller population in the Valdez area (see Section 4.1.13). A smaller population would result in decreased demand for transportation across all people-carrying modes.

General aviation into Valdez is usually recreational in nature, and the proposed changes at the VMT should not affect recreation. Effects on aviation systems would most likely be experienced in commuter air service and air taxi service. A population reduction would be expected to result in an approximately proportional reduction in demand for air travel, although the amount of current demand generated by the local population base – as opposed to recreation and tourism demand – is unknown. With commuter emplanements trending downward independent of VMT SR, it might be expected that an additional reduction in demand would result in a reduction in service from the current 3 to 4 commuter operations per day in each direction between Valdez and Anchorage. The VMT SR would have no effect on military air traffic and minor effects on general aviation traffic demand.

The VMT SR would be expected to have very minor effects on marine transportation. Tanker traffic is proportional to North Slope oil production, which is a partial cause for the VMT SR, not an effect of it. A reduction in population would result in a decline in demand for ferry service on the Alaska Marine Highway System, but the local demand is only a small percentage of total demand, so a reduction of up to 10 percent locally would be unlikely to affect service.

Freight transport demand would be expected to experience very minor, if any, change in demand.

Reduction in population would reduce travel on local roadways by an approximately proportional amount during the fall, winter, and spring. The percentage of reduction would be lower during the summer tourism season, when traffic levels are up to twice as high. Road travel would be slightly easier as a result and road maintenance requirements would be reduced by a small, but unquantifiable, amount.

Neither installation of an on-site power generation facility nor purchase of commercial power (and installation of an on-site substation) would be expected to have any significant impacts on transportation.

4.1.19 Hazardous Materials and Waste Management

Implementation of the VMT SR would result in an increase in the quantities of hazardous materials and other wastes used and managed as part of construction activities; however, in the long term, the quantities of hazardous and other waste generated at the VMT would be expected to decrease following SR.

4.1.19.1 Hazardous Waste and Materials

During construction activities, the quantities of hazardous waste generated could increase. If the Power/Vapor Plant is removed from service, then the need for the sulfuric acid and caustic soda (sodium hydroxide) tanks is eliminated. During the cleaning of these tanks, excess quantities of sodium hydroxide and sulfuric acid and rinse waters would be generated. Hazardous wastes such as outdated chemicals, fluorescent bulbs, light ballasts, etc., would also be generated from facilities to be dismantled and by other construction activities (wastes such as spent solvents, filters, cleaning agents, etc.). Hazardous waste would be stored in existing satellite and designated central accumulation areas. New accumulation areas

may be needed depending on the quantities. The waste would be shipped off site to a permitted TSD facility. The increase in hazardous waste generated should be accommodated by APSC under existing hazardous materials and waste management practices. Therefore, no adverse impacts to human health or the environment would be expected from construction activities.

Following SR, the major source of hazardous waste would continue to be from the cleaning of tanks, processing of tank bottoms, and cleaning of the pipeline. However, if up to six crude oil tanks are removed from service, then the overall quantity of tank-related wastes would be less in the future. In addition, there would be some decrease in the amount of fire foam required. Other hazardous wastes should also decrease significantly following SR because there will be less equipment to be maintained. If primary power for the VMT is not supplied by CVEA, then the requirements for diesel fuel use and storage may not be significantly reduced due to the use of on-site diesel generators.

4.1.19.2 Solid Waste

During construction activities, the quantity of solid waste (including domestic garbage and construction debris) requiring disposal would increase significantly – especially when facilities are physically removed from the VMT. A majority of this material could be recycled as scrap metal; however, the quantities of non-recyclable materials generated could exceed the capabilities of the City of Valdez construction debris landfill. Arrangements may need to be made to haul construction debris to municipal landfills outside the Valdez area. The increases in domestic garbage associated with the construction workforce are not expected to impact the ability of the City of Valdez sanitary landfills to handle wastes.

Following SR, the quantity of domestic and industrial solid waste would be less since there would be fewer people and fewer operating facilities.

4.1.19.3 Special Waste

The quantities of non-hazardous wastes that require special management practices are typically small at the VMT. This waste stream is not expected to change significantly during construction activities or following SR.

4.1.19.4 Used Oil

The quantities of used oil may increase slightly during construction; used oils would be managed to meet injection criteria and injected into the TAPS crude stream.

4.1.19.5 Contaminated Sites

Existing contaminated sites are not expected to be affected by SR. If suspected contaminated soils are encountered during construction activities, APSC would be required to undertake remediation in accordance with a remediation plan approved by ADEC.

Neither installation of an on-site power generation facility nor purchase of commercial power (and installation of an on-site substation) would be expected to have any significant impacts on solid or hazardous waste management.

4.1.20 Emergency Response Under Reconfiguration

Section 4.4 of the TAPS FEIS provides a comprehensive 145-page analysis of TAPS spill risks and possible impacts, including spill scenarios for the VMT. Although there are limited local effects of the VMT reconfiguration on spill potential and spill response, the analysis presented in the TAPS FEIS remains applicable to the VMT with or without SR.

4.1.20.1 Oil Spill Potential

The impact of VMT SR on oil spill potential at the VMT is expected to be beneficial. First, with the use of IFR tanks, the maximum fill volume of a crude oil storage tank would be reduced. With this change, the potential size and risk of the maximum spill potential per tank and for the VMT as a whole would be reduced. Second, removal of up to six of the crude oil storage tanks from service would result in a reduction in the number of tanks presenting a spill risk, as well as the maximum potential risk from the VMT.

4.1.20.2 Oil Spill Response

The proposed SR and simplification of the VMT would result in routine changes regarding spill response planning for a spill from the VMT. As long as APSC maintains the oil spill response capabilities specified in the current Valdez Marine Terminal Oil Discharge Prevention and Contingency Plan, this change at the VMT will not result in a significant change in spill response capability. Similarly, VMT SR will not impact the Prince William Sound Tanker Oil Discharge Prevention and Contingency Plan (PWS Tanker Plan Holders 2002), including the response capabilities required by that plan.

Revisions to the VMT's Spill Prevention, Control, and Countermeasures (SPCC) Plan (SP-77-VZ) would be required after reconfiguration, as the number and capacity of oil storage tanks would be reduced. No significant changes are anticipated, although the number and quantity of potential spills would be reduced.

Modeling of production, storage, and marine fleet operations by APSC has demonstrated that the number of tanks may be reduced from 18 to 12 (with IFRs) by 2007 without significant changes to the historical risk of prorationing North Slope crude production or other inventory instability issues (OASIS 2004). However, subsequent analysis by JPO-BLM (JPO 2004b) indicated crude oil inventories in June and July of 2004 would have exceeded VMT storage capacity if only 12 crude oil tanks were available. APSC attributed the increased inventory to temporary changes in loading procedures due to VMT maintenance and a reduced tanker fleet due to five tankers being dry docked or diverted. Regardless, fewer crude oil storage tanks will reduce APSC's ability to manage imbalances in TAPS throughput and may increase the risk of prorationing. Prorationing is the procedure used by APSC to allocate reductions in input of crude oil into TAPS by the various North Slope crude oil producers when there are issues or concerns of crude storage availabilities and capacities on TAPS or at the VMT.

Ongoing monitoring of tank inventory and tanker fleet size could provide supporting information regarding the ability of fewer crude oil tanks to manage and absorb potential throughput imbalances at the VMT.

4.2 NO ACTION

Impacts of the No Action Alternative would be the same as those presented in the TAPS FEIS (BLM 2002a). Under the No Action Alternative, the proposed SR would not occur and would not result in any discernible change to the existing environment.

4.3 CUMULATIVE IMPACTS

4.3.1 Introduction

NEPA and its implementing regulations require an assessment of the proposed action and other past, present, or likely future projects that together may have cumulative impacts that exceed the impacts of the proposed action alone. Cumulative impact is defined as the impact on the environment that results from the incremental impact of the proposed action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508.7).

Cumulative impacts of TAPS, including continued operation of the VMT for 30 years, were identified and evaluated in both the TAPS FEIS (BLM 2002a) and the related environmental report prepared by the TAPS Owners (TAPS Owners 2001). The BLM concluded in the TAPS FEIS that operations and maintenance changes and upgrades, such as the elements of this VMT SR, are not expected to result in adverse environmental impacts different in context or intensity from those occurring under existing operations. The BLM also found that such modifications were "not significantly distinguishable" from existing operations to constitute a separate alternative action. The analyses and conclusions in the cumulative impacts section of the TAPS FEIS, although focused on a broader action and action area, are applicable to the proposed VMT SR action. As a result, this cumulative impacts analysis is both tiered to and incorporates by reference Section 4.7 of the TAPS FEIS. Although this analysis is adopted by reference, it is important to recognize that the action area for the proposed VMT SR action is significantly smaller and that many of the projects considered in the TAPS FEIS are well beyond the action area here. In general, the TAPS FEIS analysis concluded that cumulative impacts would be minor and local, with no significant synergistic effects (BLM 2002a). The cumulative impacts of VMT operations, as modified under the proposed VMT SR action, remain of the same character, likelihood, and intensity as identified in the TAPS FEIS, except that in some instances the contribution of VMT operations to cumulative impacts would be reduced. For example, cumulative impacts to air quality remain low; however, the contribution to air emissions in the Port Valdez area from the VMT would be less than analyzed in the TAPS FEIS.

This EA incorporates by reference portions of the BLM's more recent cumulative impacts analysis in the Draft Amended Integrated Activity Plan/Environmental Impact Statement for the Northeast National Petroleum Reserve – Alaska (NE NPRA DEIS) (BLM 2004).

4.3.1.1 Resource Protection Measures Considered

Numerous federal and state resource management and monitoring programs have been established to protect environmental resources and to effect restoration. The assessment of cumulative impacts must recognize the existence of these programs and assume that the mandate under which each program was established will continue. These programs require avoidance or mitigation of environmental impacts to

the resources they are designed to protect. Section 4.6.4 of the NE NPRA DEIS, which is incorporated here by reference, identifies such resource protection measures with respect to air quality, water quality, wetlands and floodplains, EFH, marine mammals, threatened and endangered species, environmental justice, and consultation and coordination with Indian tribal governments. Section 4.1 of the TAPS FEIS also identifies an extensive array of resource protection and mitigation measures applicable to TAPS operations through the Federal Grant.

The following sections reflect supplemental considerations regarding past, present, and reasonably foreseeable future projects within the action area for the proposed VMT SR action.

4.3.2 Future Natural Gas Commercialization

Recent cumulative impacts assessment by the BLM regarding commercialization of North Slope natural gas appears in the NE NPRA DEIS (BLM 2004). That analysis, which is incorporated by reference, led the BLM to conclude that the export of natural gas is uneconomical today and that the viability, timing, and scale of future gas production and transportation systems are too uncertain to evaluate. Accordingly, the BLM concluded as of June 2004 that the development of natural gas reserves from the North Slope is speculative and not reasonably foreseeable within a 20-year time horizon. Therefore this EA does not further analyze the impacts of such a project.

4.3.3 Oil and Gas Activities, Tanker Traffic, and Spills

The TAPS FEIS and the NE NPRA DEIS analyzed in detail the cumulative impacts of reasonably foreseeable oil and gas exploration and development activities, as well as the cumulative effects of tanker traffic from the VMT and related oil spill risks, which is incorporated in this EA by reference.

4.3.4 Future VMT Operations and Maintenance Upgrades

Routine operations and maintenance activities to maintain the existing and future infrastructure of the VMT will continue as long as the VMT is operating. Consistent with the conclusion of the BLM in the TAPS FEIS, environmental consequences associated with the reasonably foreseeable future upgrades and modifications are not anticipated to be significantly distinguishable from existing operations. However, this EA does separately analyze the cumulative impacts from several future modifications that are considered reasonably foreseeable — changes to the BWTF, relocation of the Operations Control Center (OCC), consolidation of APSC Valdez facilities, installation of ultrasonic flow meters, and installation of a power recovery turbine (PRT) on the pipeline. Some of these changes may have to be made for regulatory or operational reasons, while others are at APSC's discretion and may or may not be made.

4.3.4.1 Future Ballast Water Treatment Facility Modifications

The BWTF processes oil-contaminated waters, primarily ballast water from incoming tankers, but secondarily fluids from oily sumps, other oily wastewaters, and the Industrial Wastewater Sewer System at the VMT.

APSC and the TAPS Owners are evaluating possible modifications to the BWTF, as a consequence of anticipated changes in the shipping fleet. As a result of the retirement of single-hull tankers mandated by the Oil Pollution Act of 1990 and the planned replacement of the aging and less-efficient existing double-hull and double-bottom vessels, new double-hull tankers are expected to enter the fleet (three

Millennium-class tankers are already in the fleet). A common feature of the new tankers is the segregated ballast holds that allow the vessels to bring segregated ballast on the return trip to Prince William Sound and to discharge it directly from the tanker to the ocean. Use of double-hull tankers will reduce the volume of ballast water to be treated in the BWTF. This treatment process is a main source of HAPs emissions at the VMT; therefore, it is estimated that future ambient HAPs concentrations in the vicinity of VMT will be substantially lower.

The expected future changes to BWTF operations are in response to the tanker fleet modifications that will eliminate most of the ballast water flows to the BWTF over a 10-year period. Furthermore, changes in air emissions regulations and operational problems with floating skimmers used for oil recovery may lead to modifications of the 80s Tanks and/or 90s Tanks. None of the changes are expected to result in adverse environmental or synergistic impacts, and, accordingly, the cumulative effects are expected to be undetectable and, at most, negligible.

APSC is not seeking federal authorization for changes to the BWTF at this time because the project is in the very early planning stages. To the extent appropriate, future modifications of the BWTF will likely be subject to a project-specific NEPA analysis at such time as the TAPS Owners may seek federal authorization.

4.3.4.2 Relocation of the Operations Control Center

APSC is evaluating possible relocation of the OCC from the VMT to a location in Anchorage as early as 2006, but relocation of the OCC to a new location in Anchorage has not been proposed to the TAPS Owners. Relocation of OCC would largely involve two major components: (1) relocation of the communications and computer infrastructure for controlling pipeline and VMT operations to a new location in Anchorage and (2) reassignment of 20 OCC controllers now working in Valdez to the new Anchorage location.

The OCC fulfills essential control functions but does not contribute directly to environmental impacts. Relocation of the OCC would further reduce the operations conducted within the VMT and would result in the relocation of some jobs from Valdez to Anchorage. Relocation of OCC jobs to Anchorage would cumulatively increase adverse economic and social impacts in Valdez. However, half of the current OCC controllers are not Valdez residents. Relocation of VMT personnel may reduce overall competition for subsistence resources; however, the relocation could increase residents' concerns that response to emergencies (e.g., oil spills) may be delayed. The reduction in employment could have a trickledown effect on subsistence, reducing the amount of cash available in subsistence sharing networks to pay for fuel and equipment (e.g. ammunition, fishing gear, and boats). Relocation of the OCC would marginally decrease existing potable water demand and decrease sanitary and solid waste production from the VMT.

4.3.4.3 Consolidation of Valdez Facilities and Operations

APSC is considering options to consolidate Valdez facilities and operations to simplify the existing Valdez infrastructure for equipment maintenance, warehousing, and offices. Consolidation of Valdez facilities and operations at the VMT would result in short-term environmental impacts associated with any required construction activities. These impacts would be significantly less than the impacts evaluated in this EA for construction activities for implementing SR. The long-term impacts would not be

significantly distinguishable from those for current Valdez operations. Accordingly, no adverse cumulative impacts would be expected.

4.3.4.4 Installation of Ultrasonic Flow Meters

APSC is considering installing ultrasonic flow meters at the East and West Metering Buildings at the VMT. The modern ultrasonic meters will allow removal from service of not only the existing meter banks, provers, strainers and other associated equipment, but will allow shutting down portions of buildings and associated infrastructure. Installing ultrasonic flow meters would not have additive or cumulatively significant effects with regard to VMT SR.

4.3.4.5 Installation of a Power Recovery Turbine

APSC is considering a PRT to provide supplemental power for the VMT. The concept is to place a hydraulic turbine in the TAPS flowing crude oil stream upstream of the VMT and produce electricity that could supply partial power to the VMT. A PRT could be located in parallel with the existing backpressure control valves, downstream of the existing pig receiver and upstream of the existing metering skid. The arrangement allows for construction and operation of the PRT without affecting pipeline and VMT operations.

Installation of a PRT would result in a reduction in air emissions for power generation associated with VMT operation. With regard to VMT SR, the impacts of installing a PRT are not additive or cumulatively significant.

4.3.5 Homeland Security Improvements

The U.S. Coast Guard is expected to increase the number of personnel assigned to Valdez during the next several years. At this time, approximately 4 new civilian hires are expected within the next year to work on VMT issues and planning/contingency. In addition, approximately 1 to 2 new military positions and several existing vacancies are expected to be filled as the U.S. Coast Guard grows (Swanson Pers. Comm.). These increases may offset some potential population losses associated with VMT SR.

4.3.6 Introduction of Non-Indigenous Species

As the tanker fleet servicing Valdez changes to double hull tankers, segregated ballast water will become more common. Segregated ballast water often carries organisms drawn into ballast water tanks at the point of origin that are not indigenous to the region where the ballast is discharged. As discussed in Section 4.7.7.2.1 of the TAPS FEIS (BLM 2002a), the introduction of non-indigenous species at Port Valdez and into Prince William Sound has uncertain but potentially adverse consequences for native species and local ecosystems. However, the proposed VMT SR project will not impact tanker traffic or the expected introduction of segregated ballast tanker vessels; nor will the proposed project cause or contribute to the introduction of non-indigenous species. Finally, the impacts of the VMT SR are not expected to have any adverse synergistic impact on species or ecosystems that may be affected by non-indigenous species in the future.

4.3.7 Electric Transmission Line and Commercial Power Utilization

The proposed VMT SR action includes the removal from operation and isolation of the existing Power/Vapor Plant and replacement of the power supply with either purchase of electrical power from CVEA and construction/operation of a smaller on-site diesel-engine driven backup generator, or if sufficient electrical power is found to be unavailable, with installation of prime power-generation facilities on the VMT. A new electric transmission line would have to be constructed to supply the power from CVEA to the VMT.

APSC has preliminarily identified several routes for the transmission line. The most probable route is along a new ROW along the TAPS ROW from the Meals Substation to the VMT, a distance of approximately 4 to 5 miles. The transmission line could be shorter if sufficient power is available at the Solomon Lake hydroplant or the Petro Star Refinery substation. Existing transmission lines are co-located with the TAPS ROW in various locations. These lines are in a 30-foot wide ROW adjacent to the TAPS ROW. It is assumed the same would be true if a CVEA line is constructed to the VMT. The transmission line could also be constructed along Dayville Road from the Solomon Gulch hydroelectric generating plant to the VMT.

Birds may be affected by the construction of a new electric transmission line, should the project elect to purchase commercial power from CVEA. Transmission lines affect birds in two primary ways: 1) birds striking the wires and 2) birds being electrocuted by touching multiple wires. The latter is usually only a concern for large birds. These potential impacts could be mitigated by location and design of the power line. The proposed transmission line route, which parallels the TAPS ROW, travels through wooded areas and over hilly terrain. Also, it is not in any direct migration route. Birds are not as likely to strike the transmission line in either of these areas due to the natural structures present (trees, hills), which will encourage the birds to fly over the power line (Brown and Drewien 1995).

Connection of VMT to the commercial power grid will require vegetation to be removed along the proposed ROW. This brush cutting would cause short-term disturbance of wildlife in the immediate vicinity of such activities. Birds and other animals that inhabit shrubs in the ROW would be displaced to adjacent undisturbed habitats. Although this short-term disturbance will occur during construction activities related to the power grid connection, it will be minor. Assuming that the power lines will follow closely to the current pipeline ROW, disturbance to habitats will also be minor and will not contribute to habitat fragmentation.

It is unclear whether there would be cumulative impacts to air quality from the use of commercial power because the design is not far enough along to ascertain whether current power generation at CVEA is sufficient to provide VMT with power or additional power generation would be needed. If additional power generation were to be required, there would be an increase in emissions at the power location. It is assumed there would still be an overall decrease in pollutant emissions as larger, commercial power generators are generally considered to be more efficient and better controlled.

4.4 MITIGATION

The mitigation measures presented below are designed to reduce the potential environmental consequences specifically associated with VMT SR as identified in Section 4.0. Although no significant environmental impacts were identified with the proposed action, the mitigation measures identified below

would reduce overall environmental impacts and minimize the probability of unlikely adverse environmental impacts. These measures are in addition to existing applicable federal, state, and local laws and regulations; the requirements of the Federal Grant; and existing APSC environmental protection plans and procedures.

4.4.1 Seismicity

1. Design of the internal floating roofs as part of the Notice to Proceed Application process will consider sloshing waves and potential deformed tank walls associated with earthquakes that have a probability of occurring consistent with the Earthquake Stipulation 3.4.1 of the Grant of Right-of-Way during the life of the Valdez Marine Terminal.

2. Alyeska Pipeline Service Company will monitor, as a part of Alyeska's MP-166 annual system integrity monitoring program, the performance and integrity of the internal floating roof tanks. Monitoring will include documentation of the frequency of internal roof movement, the number of times the roofs hit bottom, and documentation of any irregularities.

4.4.2 Water Resources

3. Prior to construction of the firewater reservoir, a sufficient number of piezometers, as determined by a professional engineer and approved as a part of the Notice to Proceed Permit Process by the Joint Pipeline Office, will be installed to determine whether any observed changes in groundwater on the slopes above the Valdez Marine Terminal result from construction of the firewater reservoir or natural changes in groundwater levels.

4.4.3 Recreational and Visual Resources

4. A reclamation plan that addresses site areas cleared by removal of Valdez Marine Terminal facilities will be prepared by Alyeska Pipeline Service Company and approved by the Joint Pipeline Office-Bureau of Land Management.

4.4.4 Emergency Response under Reconfiguration

5. Alyeska Pipeline Service Company will conduct an inventory trend analysis at the end of each year and provide the results to Joint Pipeline Office-Bureau of Land Management as part of Alyeska's annual MP-166 System Integrity Reporting Program. The purpose of the analysis will be to assess inventory over the past years and demonstrate that sufficient storage capacity will remain after removal of additional crude oil storage tanks from service. This inventory trend analysis should also be conducted in the future if North Slope oil production increases beyond the rates estimated in the original analysis.

6. Alyeska Pipeline Service Company will revise spill prevention and contingency plans to reflect changes in the number and capacity of crude oil storage tanks and changes in the number of on-site employees.

4.5 UNAVOIDABLE IMPACTS AND THE EFFECTIVENESS OF MITIGATION

TAPS, including the VMT, has existed for over 30 years and is now part of the affected environment. For this reason, major construction-related impacts to landforms, soil, vegetation, waterbodies, habitat, and cultural resources have already occurred. Because of the small scale nature of the proposed operations and maintenance actions, VMT SR does not change this basic circumstance. The VMT will continue to operate, though with less infrastructure to maintain and fewer on-site personnel, which will result in long-term beneficial impacts to the environment.

The discussion in Section 4.8 of the TAPS FEIS of unavoidable adverse impacts, the relationship between local short-term uses of the environment and long-term productivity, the irreversible and irretrievable commitment of resources, and mitigation of adverse effects remains applicable and is adopted here by reference.

The primary unavoidable disturbances resulting from the proposed VMT SR action are related to activities associated with construction occurring within the boundaries of the existing VMT. The impacts of these activities are expected to be short-term, confined to the VMT, minor, and readily mitigated. VMT SR is expected to reduce long-term environmental impacts.

The JPO is responsible for ensuring that mitigation measures are properly implemented and that they are environmentally effective over time; that is, they minimize potential environmental impacts associated with SR. The JPO has discretion in scheduling effectiveness monitoring activities, determining monitoring approaches or methodologies, and establishing monitoring standards, but the level and intensity of monitoring will vary according to the potential impact being mitigated. Effectiveness monitoring can be both qualitative and quantitative in nature. However, it is important that the monitoring effort result in sufficient data and observations to make a meaningful analysis of the effectiveness of the mitigation.

When “committed to” in the decision record, APSC will also have a legal obligation to fully implement and monitor the effectiveness of the mitigation measures. For example, environmental monitoring during SR construction activities at the proposed freshwater firewater reservoir will provide information about the effectiveness of measures to mitigate potential environmental impacts to water quality and fish resources.

Demonstrated compliance with effective mitigation measures and other project conditions will allow the BLM to have SR proceed in an environmentally sound manner. Should mitigation actions not prove adequately effective, modifications to the mitigations or to SR activities may be necessary. Furthermore, any proposed SR actions that are not within the scope of this EA may be subject to further NEPA review.

With implementation of the suggested mitigation measures, the proposed action, including either option under the power generation sub-alternative, under existing JPO oversight and the regulatory environment, should not result in any significant environmental impacts.

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APPENDIX A

CONSULTATIONS

2005-008

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United States Department of the Interior

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JOINT PIPELINE OFFICE
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FISH AND WILDLIFE SERVICE

Anchorage Fish and Wildlife Field Office
605 West 4th Avenue, Room G-61
Anchorage, Alaska 99501-2249

October 7, 2004

Jerry Brossia
Bureau of Land Management
411 West 4th Avenue
Anchorage, Alaska 99501

Re: Valdez Marine Terminal Reconfiguration *(consultation number 2005-008)*

Dear Mr. Brossia,

Thank you for your September 8, 2004 letter requesting informal consultation for the Valdez Marine Terminal Reconfiguration. The U.S. Fish and Wildlife Service has reviewed the information on this project and is providing the comments below in accordance with section 7 (a) (2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended, 16 U.S.C. 1531 *et seq.* (ESA).

A few Steller's eiders winter in Valdez. Projects such as the one described here typically have no effect upon this species, however. Our records indicate that there are no other listed species in this area; neither are there any species proposed for listing. In addition, there are no areas designated or proposed as critical habitat within the action area of the proposed project. Therefore, the requirements of section 7 (a) (2) of the ESA have been satisfied and no further consultation pursuant to the ESA is required for this project at this time.

This letter relates only to species listed or proposed under ESA and/or designated or proposed critical habitat under our jurisdiction. It does not address species under the jurisdiction of National Marine Fisheries Service, or other legislation or responsibilities under the Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act, Bald and Golden Eagle Protection Act, or Migratory Bird Treaty Act.

This concludes section 7 consultation for the Valdez Marine Terminal Reconfiguration. Thank you for your cooperation in meeting our joint responsibilities under section 7 of the Endangered Species Act. If you have any further endangered species questions, please contact me at (907) 271-2807. Please refer to consultation number 2005-008 in future correspondence on this project.

Sincerely,

Gregory L. Risdahl

Gregory L. Risdahl
Endangered Species Biologist

20041018-2

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
411 West 4th Avenue
Anchorage, Alaska 99501
http://www.ak.blm.gov

TAKE PRIDE IN AMERICA

AUG 26 2004

Letter No.: 04-047-WW
Case File Serial No.: AA005847
FF012505
Section/Stipulation: Section 10
Facility Code: F5020, F5060, F5080, F5090, F5095
DD.: N/A

Mr. Patrick J. Sousa
Field Supervisor
Northern Alaska Ecological Services
U.S. Fish and Wildlife Service
Fairbanks, Alaska 99701

Dear Mr. Sousa:

The U.S. Department of the Interior, Bureau of Land Management (BLM) is completing an environmental assessment for a strategic reconfiguration of the Valdez Marine Terminal (VMT) of the Trans-Alaska Pipeline System (TAPS). This letter is to request informal consultation with your agency in accordance with the Endangered Species Act and the Magnuson-Stevens Fishery Conservation and Management Act.

Alyeska Pipeline Service Company, the pipeline operator, estimates the strategic reconfiguration changes will reduce physical infrastructure and simplify operations and maintenance by using new technology to replace equipment that has become inefficient and costly to operate. The VMT is the terminus of TAPS, which was completed in 1977 with equipment, systems and facilities capable of transporting up to 2.1 million barrels of oil per day. Currently, the system is handling one million barrels per day, and this rate is expected for several years, followed by a gradual decline.

The primary focus of the VMT reconfiguration includes installation of internal floating roofs on at least 12 crude oil storage tanks; removal from service and isolation of the existing power/vapor plant, including its boilers and incinerators; removal from service and isolation of up to six of the existing 18 crude oil storage tanks; replacement of the existing tanker vapor control system with new vapor combustors; replacement of existing pumped-seawater firewater supply system with a gravity flow freshwater supply system; and, providing electrical power by connection to the commercial power grid and installation of an on-site backup diesel power plant or installation of on-site primary diesel power plant and backup. The scope of the proposed strategic reconfiguration applies only to the afore-

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mentioned six projects within the Valdez Marine Terminal, and not the marine tanker operations, the pump stations, mainline pipe or any other TAPS components. We do not anticipate environmental impacts in Prince William Sound as a result of these six projects.

BLM completed an environmental assessment of the reconfiguration of the TAPS pump stations in January 2004, where we requested an informal consultation with your agency. We appreciated your timely response. BLM also completed a final environmental impact statement (FEIS) in November 2002 that addressed the impacts of renewing the Federal Agreement and Grant of Right-of-Way for another thirty years. A Record of Decision to renew the Grant for thirty years was signed in January of 2003. The possibility of reconfiguration changes to reduce physical infrastructure and simplify operations and maintenance at the VMT was discussed in the FEIS, however, detailed information regarding the changes was not available to BLM at that time. During the renewal process, BLM consulted with your agency, then produced a biological evaluation that found 1) renewal of TAPS would not likely adversely affect any of the five species under consideration, and 2) no designated critical habitat exists within the action area. BLM sent your agency the 96-page TAPS Renewal Biological Evaluation as an enclosure to our letter dated December 31, 2003, requesting informal consultation for pump station reconfiguration.

The VMT environmental assessment will be sent to your agency for review and comment when it is completed the first of October. BLM plans to have a 30-day public review of the EA and the decision record from mid-October to mid-November. As the reconfiguration process proceeds, BLM will fully comply with the findings and recommendations provided by your agency during the recent renewal process, along with the stipulations in the Federal Grant of Right-of-Way. Based on consultations with your agency during the recent renewal process for the Federal Grant, BLM believes that formal consultation will not be required for this Valdez Marine Terminal TAPS reconfiguration project.

If you have any questions, please contact Lois Simenson of our office at 257-1344.

Sincerely,

Jerry Brossia
Authorized Officer
BLM/OPM

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
411 West 4th Avenue
Anchorage, Alaska 99501
http://www.ak.blm.gov

TAKE PRIDE IN AMERICA

AUG 26 2004

Letter No.: 04-048-WW
Case File Serial No.: AA005847
FF012505
Section/Stipulation: Section 10
Facility Code: F5020, F5060, F5080, F5090, F5095
DD.: N/A

Mr. James W. Balsiger, Administrator
National Marine Fisheries Service Alaska Region
P.O. Box 21668
Juneau, AK 99802-1668

Dear Mr. Balsiger:

The U.S. Department of the Interior, Bureau of Land Management (BLM) is completing an environmental assessment for a strategic reconfiguration of the Valdez Marine Terminal (VMT) of the Trans-Alaska Pipeline System (TAPS). This letter is to request informal consultation with your agency in accordance with the Endangered Species Act and the Magnuson-Stevens Fishery Conservation and Management Act.

Alyeska Pipeline Service Company, the pipeline operator, estimates the strategic reconfiguration changes will reduce physical infrastructure and simplify operations and maintenance by using new technology to replace equipment that has become inefficient and costly to operate. The VMT is the terminus of TAPS, which was completed in 1977 with equipment, systems and facilities capable of transporting up to 2.1 million barrels of oil per day. Currently, the system is handling one million barrels per day, and this rate is expected for several years, followed by a gradual decline.

The primary focus of the VMT reconfiguration includes installation of internal floating roofs on at least 12 crude oil storage tanks; removal from service and isolation of the existing power/vapor plant, including its boilers and incinerators; removal from service and isolation of up to six of the existing 18 crude oil storage tanks; replacement of the existing tanker vapor control system with new vapor combustors; replacement of existing pumped-seawater firewater supply system with a gravity flow freshwater supply system; and, providing electrical power by connection to the commercial power grid and installation of an on-site backup diesel power plant or installation of on-site primary diesel power plant and backup. The scope of the proposed strategic reconfiguration applies only to the afore-mentioned six projects within the Valdez Marine Terminal, and not the marine tanker operations, the

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pump stations, mainline pipe or any other TAPS components. We do not anticipate environmental impacts in Prince William Sound as a result of these six projects.

BLM completed an environmental assessment of the reconfiguration of the TAPS pump stations in January 2004, where we requested an informal consultation with your agency. We appreciated your timely response. BLM also completed a final environmental impact statement (FEIS) in November 2002 that addressed the impacts of renewing the Federal Agreement and Grant of Right-of-Way for another thirty years. A Record of Decision to renew the Grant for thirty years was signed in January of 2003. The possibility of reconfiguration changes to reduce physical infrastructure and simplify operations and maintenance at the VMT was discussed in the FEIS, however, detailed information regarding the changes was not available to BLM at that time. During the renewal process, BLM consulted with your agency, then produced a biological evaluation that found 1) renewal of TAPS would not likely adversely affect any of the five species under consideration, and 2) no designated critical habitat exists within the action area. BLM sent your agency the 96-page TAPS Renewal Biological Evaluation as an enclosure to our letter dated December 31, 2003, requesting informal consultation for pump station reconfiguration.

The VMT environmental assessment will be sent to your agency for review and comment when it is completed the first of October. BLM plans to have a 30-day public review of the EA and the decision record from mid-October to mid-November. As the reconfiguration process proceeds, BLM will fully comply with the findings and recommendations provided by your agency during the recent renewal process, along with the stipulations in the Federal Grant of Right-of-Way. Based on consultations with your agency during the recent renewal process for the Federal Grant, BLM believes that formal consultation will not be required for this Valdez Marine Terminal TAPS reconfiguration project.

If you have any questions, please contact Lois Simenson of our office at 257-1344.

Sincerely,

Jerry Brossia
Authorized Officer
BLM/OPM

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
411 West 4th Avenue
Anchorage, Alaska 99501
http://www.ak.blm.gov

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SEP 0 8 2004

Letter No.: 04-054-WW
Case File Serial No.: AA005847, FF012505
Section/Stipulation: 1.7, 1.9
Facility Code: F5020, F5060, F5080, F5090, F5095
DD.: N/A

Ms. Judith E. Bittner
Office of History and Archaeology
Alaska Division of Parks and Outdoor Recreation
550 W. 7th Ave., Suite 1310
Anchorage, Alaska 99501-3565

Re: Section 106 Consultation for the Reconfiguration of the Trans-Alaska Pipeline System Facilities at the Valdez Marine Terminal

Dear Ms. Bittner:

The U.S. Department of the Interior, Bureau of Land Management (BLM) is completing an environmental assessment for a strategic reconfiguration of the Trans-Alaska Pipeline System (TAPS) facilities at the Valdez Marine Terminal (VMT). This letter is to inform you of the proposed strategic reconfiguration of the VMT and associated environmental assessment in accordance with Section 106 of the National Historic Preservation Act, and to request any comments or concerns you may have about the proposed action.

Alyeska Pipeline Service Company, the pipeline operator, estimates the strategic reconfiguration changes will reduce physical infrastructure and simplify operations and maintenance by using new technology to replace equipment that has become inefficient and costly to operate. The VMT is the terminus of TAPS, which was completed in 1977 with equipment, systems and facilities capable of transporting up to 2.1 million barrels of oil per day. Currently, the system is handling one million barrels per day, and this rate is expected for several years, followed by a gradual decline.

Alyeska's proposal includes installation of internal floating roofs on 12 crude oil storage tanks; removal from service and isolation of the existing power/vapor plant, including its boilers and incinerators; removal from service and isolation of up to six of the existing 18 crude oil storage tanks; replacement of the existing tanker vapor control system with new vapor combustors; replacement of existing pumped-seawater firewater supply system with a gravity flow freshwater supply system; and,

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providing electrical power by connection to the commercial power grid and installation of an on-site backup diesel power plant or installation of on-site primary diesel power plant and backup. We have enclosed Alyeska's Strategic Reconfiguration information sheet for your reference.

BLM completed a final environmental impact statement (FEIS) for renewal of the federal right-of-way in November 2002 that considered potential impacts to cultural resources as part of the environmental analyses. ENSR International is assisting JPO in preparing the environmental assessment and will consider potential impacts to cultural resources as part of their analysis. We would appreciate it if you would submit comments to us within the next 30 days. Your time and consideration are greatly appreciated.

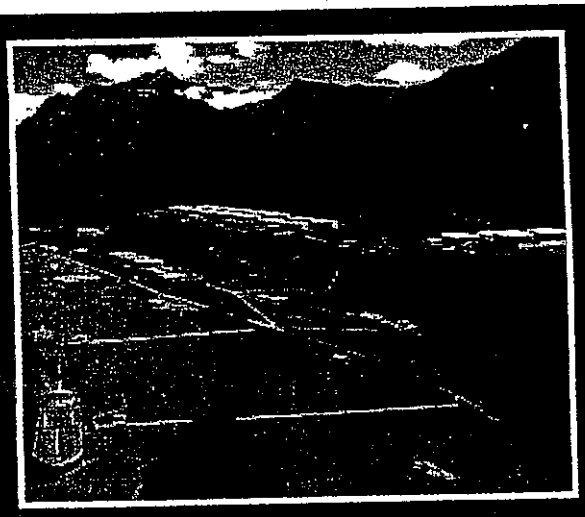
If you have any questions, please call Lois Simenson at (907) 257-1344.

Sincerely,

Jerry Brossia
Authorized Officer
BLM/OPM

Enclosure: Alyeska Pipeline Service Co. Strategic Reconfiguration Information Sheet, Dated 8/13/04

Cc: Steve Ellsworth, ENSR



STRATEGIC RECONFIGURATION

Valdez Marine Terminal

Alyeska Pipeline Service Company as the operator of the Trans Alaska Pipeline System (TAPS), and the TAPS Owners, are proposing several changes to the current configuration of the Valdez Marine Terminal (VMT). These changes will reduce physical infrastructure and simplify operations and maintenance by using new technology to replace equipment that has become inefficient and costly to operate. The VMT is the terminus of TAPS, which was completed in 1977 with equipment, systems, and facilities capable of transporting up to 2.1 million barrels of oil per day. Currently, the system is handling about 1 million barrels per day, and this rate is expected for several years, followed by a gradual decline.

The proposed VMT strategic reconfiguration project will simplify VMT facilities and help Alyeska reposition TAPS to efficiently handle the current and predicted decline of North Slope crude-oil production. A reconfigured VMT would provide for lower crude-oil transportation costs, create the potential to extend the useful life of TAPS, and better position Alaska to compete for investment in a global oil market.

This proposal is currently in the preliminary engineering phase, which is scheduled for completion in the first quarter of 2005. Although the current level of definition of the project is sufficiently complete to represent the proposed action, approval of this project will not be requested from the TAPS Owners until the completion of preliminary engineering. If the proposed project remains technically and economically desirable, final design and construction may be authorized by the TAPS Owners beginning in the second quarter of 2005, with project completion before the end of 2008.

Design Approach

VMT strategic reconfiguration uses a scalable approach. Equipment can be easily added or removed to accommodate decreases or increases in TAPS throughput or changes to the marine tanker fleet. The reconfigured terminal could be modified to expand capacity without significant changes. The time required to increase VMT capacity would be significantly less than the time needed to develop and bring new oil to the pipeline.

In implementing reconfiguration, Alyeska will continue to maintain safety and operational integrity, and will meet all environmental and regulatory requirements.

Proposed Action

Three of the proposed activities are linked by the common purpose of replacing the VMT Power/Vapor Plant, which provides electrical power for the terminal and controls vapors from storage tanks and tankers. Installing internal floating roofs (IFRs) on tanks, replacing the tanker vapor system with new vapor combustors, and installing new power generation facilities will eliminate the need for the Power/Vapor Plant. Alyeska also proposes to upgrade the firewater system.

Power/Vapor Plant: This plant is oversized for current terminal power and vapor control needs. The vapor system is complex, and its efficiency is hard to maintain with declining throughput. For maintenance reasons, the incinerators in the existing plant must be fired continuously, even

when no vapor is available. To do this, they must burn fuel and produce air emissions. Alyeska proposes to:

- Replace the vapor combustion portion of the existing VMT vapor control system with a new, stand-alone marine vapor combustor system that operates only when needed.
- Install IFRs on at least 12 crude oil tanks to eliminate the need for vapor control for crude storage.
- Remove from service and isolate the Power/Vapor Plant.

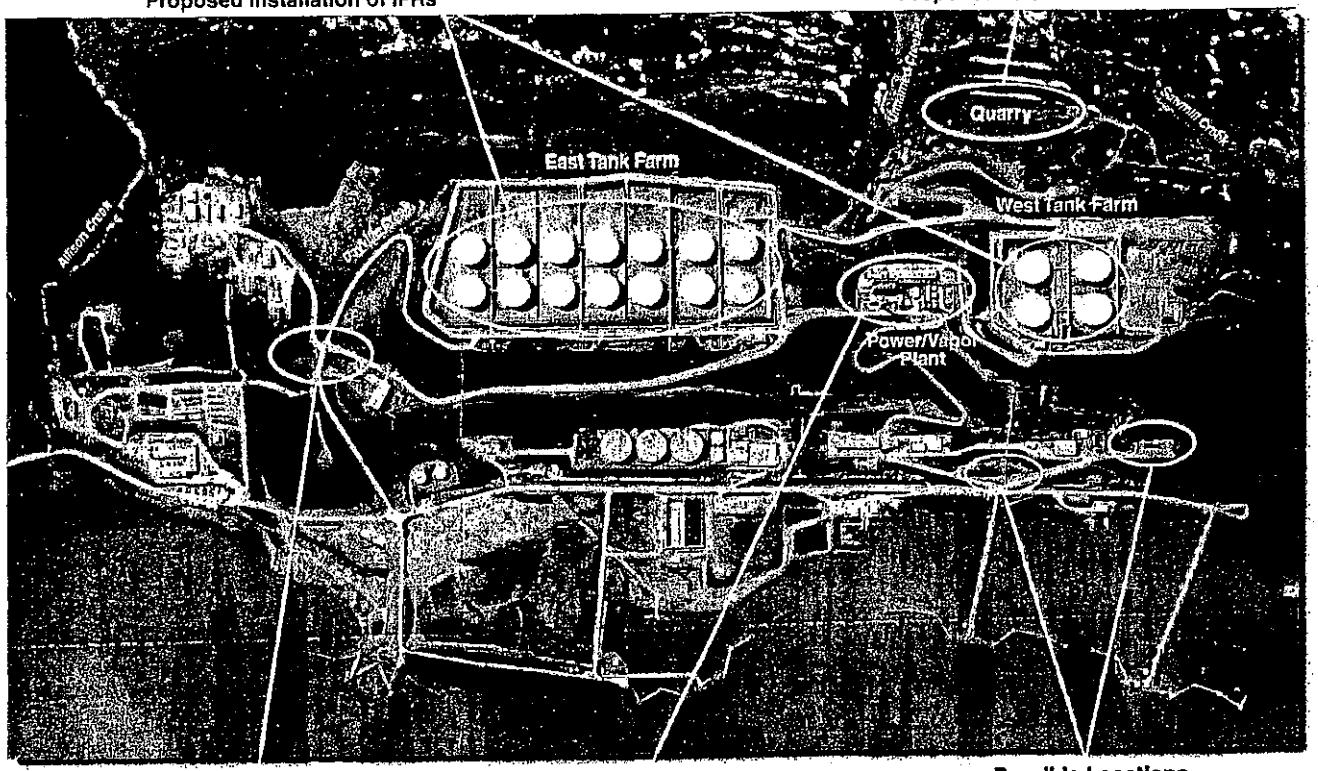
Eliminating the Power/Vapor Plant could reduce terminal power needs by more than half and significantly reduce equipment maintenance requirements at the VMT.

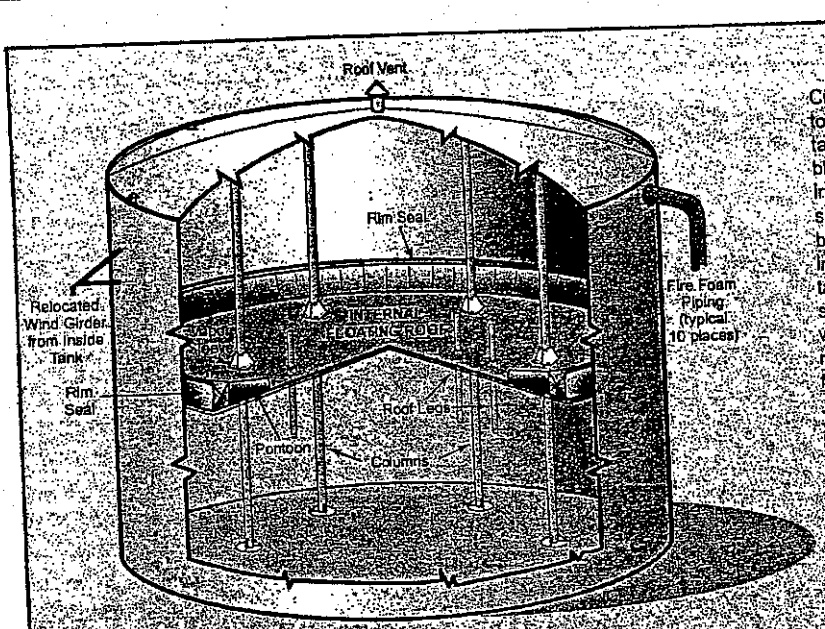
Crude Oil Storage Tanks: Alyeska proposes to remove from service and isolate up to six of the 18 crude oil storage tanks, with the remaining tanks receiving IFRs. This would result in less oil stored at the terminal, with a corresponding decrease in maintenance and the potential for spill risk associated with tanks.

Electrical Power: Another source of power is needed to take the Power/Vapor Plant out of service. Alyeska is examining two options: (a) connecting to the commercial power grid and installing an on-site backup diesel power plant, or (b) installing new on-site diesel power plant with backup.

Firewater System: The terminal currently has an extensive firewater system that uses seawater from Port Valdez and a series of diesel-powered pumps to provide firewater to hydrants. The seawater fire system requires a high degree of maintenance due to saltwater-induced corrosion problems. Alyeska proposes to replace pumped seawater with a gravity-flow freshwater system. Alyeska would create a freshwater pond in a rock quarry on the terminal and remove the diesel-powered pumps from service. Sufficient water can be stored at this location to exceed the design-case terminal fire scenario and meet or exceed applicable code requirements and industry standards for the current VMT fire systems and for the equipment to be installed under reconfiguration. Removal of the diesel-powered firewater pumps would eliminate another source of air emissions from terminal operations.

Elements of the Proposed VMT Strategic Reconfiguration



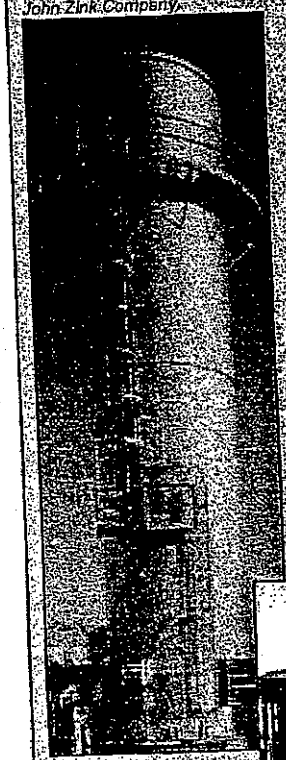


The actual installation will involve a total of 61 columns in each tank. Only four columns are shown above for graphic depiction purposes.

Currently, the Power/Vapor Plant is required to control the vapors in the crude oil storage tanks by providing vapor balance and the blanket gas needed to keep the vapor space in the tanks inert (non-flammable). This vapor space and need for inert (non-flammable) blanket gas will be eliminated by installation of internal floating roofs (IFRs) on the crude tanks. Floating-roof tanks are the industry standard for storage of volatile organic liquids with vapor pressure less than 11.1 psia as a result of the elimination of this potentially flammable vapor space.

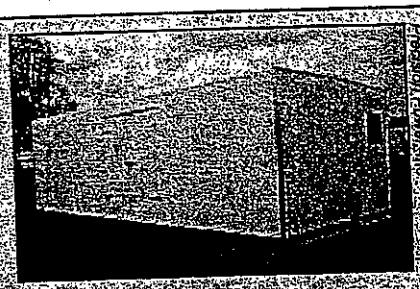
The installation of IFRs on at least 12 crude tanks will eliminate a significant number of instruments, valves, and compressors that are necessary to monitor and control the existing vapor in the crude tanks. In addition, since IFRs will eliminate the need to incinerate tank vapors, an estimated 500 to 700 equivalent barrels of oil would be saved each day for loading on tankers.

John Zink Company



The existing Power/Vapor Plant also provides vapor control during tanker loading operations. To meet this continued need, VMT strategic reconfiguration will involve installation of new vapor combustors, which are significantly simpler devices for vapor incineration than the current system of boilers and incinerators in the Power/Vapor Plant. Four combustors similar to the one shown at left will be installed, along with two vapor blower units (similar to the one below). Each combustor will be about 12 feet in diameter and 70 feet tall. Each combustor will be able to handle the vapors associated with a tanker loading rate of approximately 40,000 barrels per hour, while each blower unit will be able to handle loading rates of about 100,000 barrels per hour.

John Zink Company



Alyeska Pipeline

From two to four new generator modules like the one above will be installed at the VMT to provide primary and/or backup power generation. The total generator capacity on site would produce about 5.0 megawatts of power. Purchase of commercial power is also being considered, but backup generators would be required at the terminal.

The existing onshore firewater system uses seawater from Port Valdez, requires large pumps, and requires a high degree of maintenance due to saltwater-induced corrosion problems. The quarry at the terminal (shown above) can be filled with water to provide a simple, gravity-fed replacement for seawater. The pond will hold about 12.6 million gallons of freshwater.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
411 West 4th Avenue
Anchorage, Alaska 99501
http://www.ak.blm.gov

TAKE PRIDE IN AMERICA

AUG 13 2004

Letter No.: 04-036-WW
Case File Serial No.: AA005847
Section/Stipulation: 1.7.3
Facility Code: F5020, F5060, F5080, F5090, F5095
DD.: N/A

Valdez City Hall
Attn: Dave Dengel
Box 307
Valdez, Alaska 99686

Dear Mr. Dengel:

This letter is to inform you of a proposal submitted to BLM from Alyeska Pipeline Service Company regarding the reconfiguration of TAPS facilities at the Valdez Marine Terminal, and JPO's plan for review and approval of Alyeska's project. We also want to inform you of an upcoming BLM public meeting in Valdez, where members of the public may comment on Alyeska's proposal.

Alyeska has proposed the following changes at the Valdez Terminal, depending on TAPS Owner approval:

- Installation of internal floating roofs on at least 12 crude oil storage tanks.
- Removal from service and isolation of the existing power/vapor plant, including its boilers and incinerators.
- Removal from service and isolation of up to six of the existing 18 crude oil storage tanks.
- Replacement of the existing tanker vapor control system with new vapor combustors.
- Replacement of existing pumped-seawater firewater supply system with a gravity flow freshwater supply system.
- Providing electrical power by connection to the commercial power grid and installation of an on-site backup diesel power plant or installation of on-site primary diesel power plant and backup.

Alyeska will be submitting a series of applications for Notices to Proceed to JPO for approval of the individual project. JPO's review and approval plan consists of three major steps:

20040817-3

1) Conduct a NEPA review and analysis process to evaluate the environmental impacts of Alyeska's proposed action for the strategic reconfiguration of some facilities at the Valdez Marine Terminal.
2) Review and approve Alyeska's Phase 1 Preliminary Engineering and Design plans.
3) Review and approve the Notices to Proceed for individual project pieces

As part of the National Environmental Policy Act (NEPA) review and analysis process, BLM plans to hold a public meeting August 18, 2004, 7:00-10:00 p.m. at the Valdez Civic Center. The purpose of the meeting is for the public to learn more about the reconfiguration project being proposed and to provide comments and concerns relating to these changes. We welcome your attendance and input at this meeting.

Subsequent to the public meeting, the BLM at the Joint Pipeline Office will prepare an environmental assessment and issue an agency decision, either a Finding of No Significant Impact or a decision to do an environmental impact statement. This will be followed by JPO review and approval of the engineering designs and the notices to proceed.

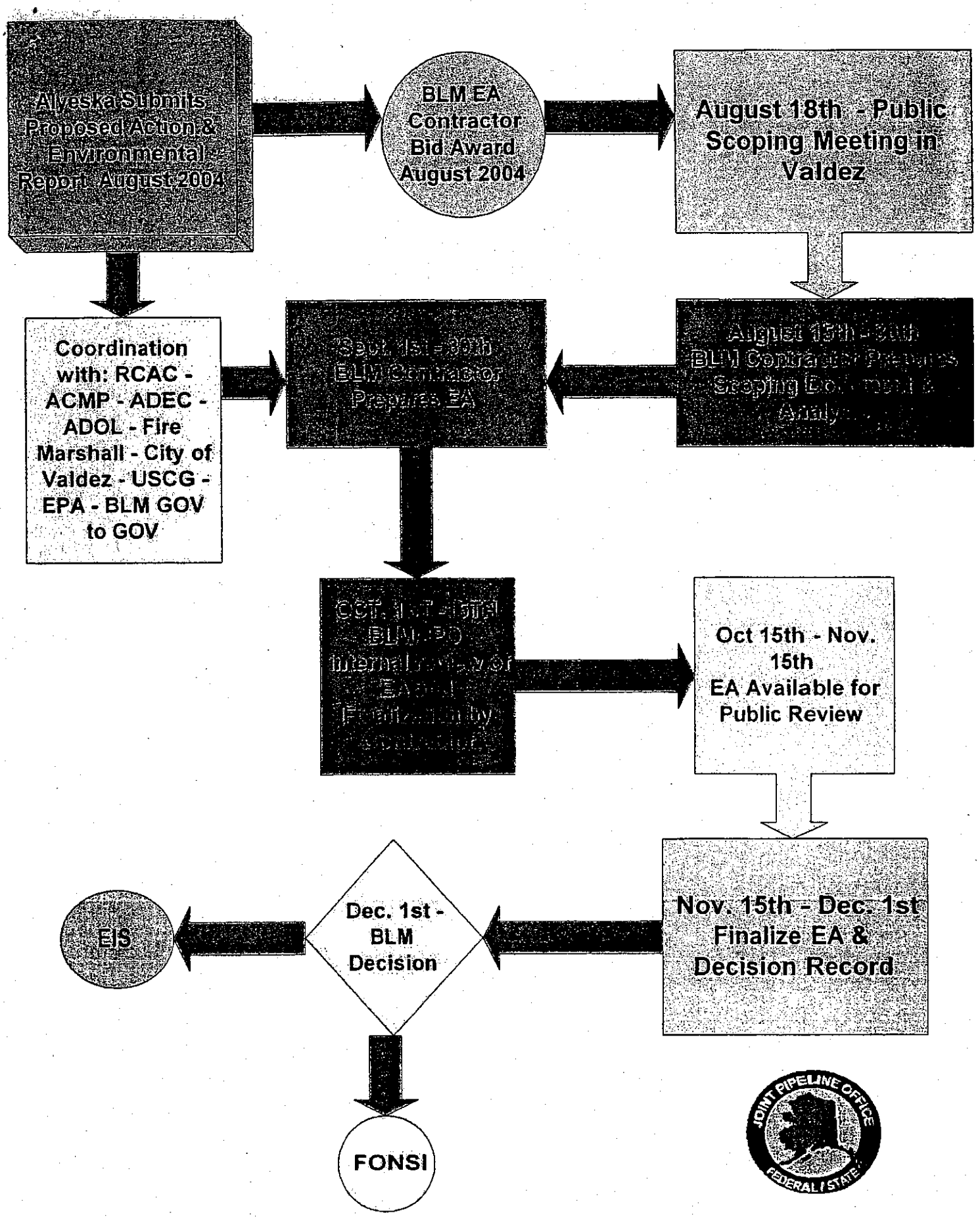
The public meeting is not the only opportunity for input and comment on the proposal. JPO will accept oral or written comments during our NEPA process that we expect to have completed by mid-October.

If you have any questions regarding BLM's process, you may contact Lois Simenson, NEPA Project Manager at (907) 257-1344 or Joe Dygas, NTP Engineering Review Project Manager at (907) 257-1327.

Sincerely,

Jerry Brossia
Authorized Officer
BLM/OPM ADNR/SPCO

Enclosures: 1) Flow Chart for BLM's Process (1 Page)
2) BLM Fact Sheet – NEPA Process (1 Page)



BLM's Environmental Assessment Process for Strategic Reconfiguration at the Valdez Marine Terminal

BLM FACT SHEET

VALDEZ MARINE TERMINAL STRATEGIC RECONFIGURATION

BLM NEPA REVIEW AND NOTICE TO PROCEED APPROVAL PROCESS

- BLM is conducting a National Environmental Policy Act (NEPA) review and analysis to evaluate the environmental effects of Alyeska's proposed action to reconfigure portions of the Valdez Marine Terminal.

- As part of the NEPA process, BLM is holding a public meeting to gather comment to better identify the scope of the environmental assessment.

- BLM will prepare an environmental assessment after gathering public comments.

- BLM will make the environmental assessment available for a 30-day public review.

- Subsequent to the public meeting, BLM will prepare an environmental assessment and issue an agency decision, either a finding of no significant impact or a decision to do an environmental impact statement.

- Upon completion of the NEPA process, BLM will review and approve the engineering designs and notices to proceed.

- BLM will systematically review individual Applications for Notice to Procede to ensure each complies with the environmental assessment.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
411 West 4th Avenue
Anchorage, Alaska 99501
http://www.ak.blm.gov

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AUG 13 2004

Letter No.: 04-032-WW
Case File Serial No.: AA005847
Section/Stipulation: 1.7.3
Facility Code: F5020, F5060, F5080, F5090, F5095
DD.: N/A

Ms. Benna Mae Hughley
President
Valdez Native Tribe
P.O. Box 1108
Valdez, Alaska 99686

Dear Ms.. Mae Hughley:

The BLM Joint Pipeline Office attended a monthly board meeting at the Chugach Regional Resources Commission July 1, 2004, to inform the Commission about a proposal submitted to BLM from Alyeska Pipeline Service Company regarding the reconfiguration of TAPS facilities at the Valdez Marine Terminal. The Commission suggested we contact the CRRC tribal leaders and members of the Inter-Tribal Oil and Gas Coalition to notify you of this proposal, along with an upcoming public meeting regarding the individual project pieces being proposed at the Terminal.

This letter is to inform you of JPO's plan for review and approval of Alyeska's Strategic Reconfiguration Project for the Valdez Marine Terminal and an upcoming BLM public meeting in Valdez, where members of the public may comment on the proposal. Alyeska will be submitting a series of applications for Notices to Proceed to JPO for approval of the individual projects.

JPO's review and approval plan consists of three major steps:

1) Conduct a NEPA review and analysis process to evaluate the environmental impacts of Alyeska's proposed action for the strategic reconfiguration of some facilities at the Valdez Marine Terminal.
2) Review and approve Alyeska's Phase 1 Preliminary Engineering and Design plans.
3) Review and approve the Notices to Proceed for individual project pieces.

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To begin our NEPA process, BLM plans to hold a public meeting August 18, 2004, 7:00-10:00 p.m. at the Valdez Civic Center. The purpose of the meeting is for the public to learn more about the reconfiguration project being proposed and to provide comments and concerns relating to these changes. You are welcome to provide comments to BLM on the proposal.

Alyeska has proposed the following changes at the Valdez Terminal, depending on TAPS Owner approval:

- Installation of internal floating roofs on at least 12 crude oil storage tanks.
- Removal from service and isolation of the existing power/vapor plant, including its boilers and incinerators.
- Removal from service and isolation of up to six of the existing 18 crude oil storage tanks.
- Replacement of the existing tanker vapor control system with new vapor combustors.
- Replacement of existing pumped-seawater firewater supply system with a gravity flow freshwater supply system.
- Providing electrical power by connection to the commercial power grid and installation of an on-site backup diesel power plant or installation of on-site primary diesel power plant and backup.

Subsequent to the public meeting, the BLM at the Joint Pipeline Office will prepare an environmental assessment and issue an agency decision, either a Finding of No Significant Impact or a decision to do an environmental impact statement. This will be followed by JPO review and approval of the engineering designs and the notices to proceed.

We want to work with you to assure that your governing body and tribal members are fully aware of this proposal, the process we will follow in approving this project, and let you know that we welcome your input during this process.

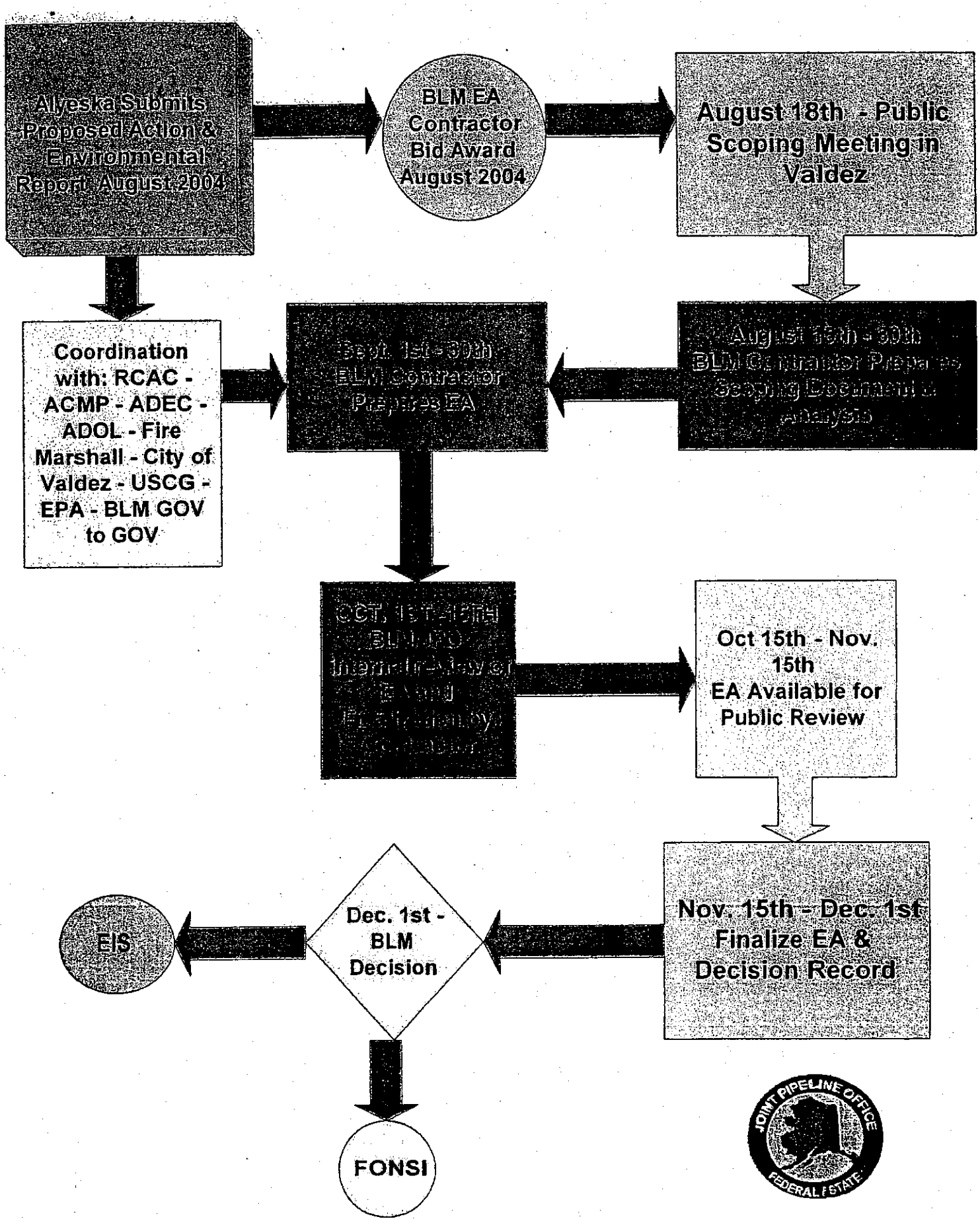
The public meeting is not the only opportunity for input and comment on the proposal. JPO will accept oral or written comments during our NEPA process that we expect to have completed by mid-October.

If you have any questions you may contact Lois Simenson at (907) 257-1344, or e-mail her at Lsimenso@jpo.doi.gov.

Sincerely,

Jerry Brossia
Authorized Officer
BLM/OPM ADNR/SPCO

Enclosure: Flow Chart for BLM's EA Process (1 Page)



BLM's Environmental Assessment Process for Strategic Reconfiguration at the Valdez Marine Terminal

Mr. Patrick Norman
First Chief
Port Graham Village Council
P.O. Box 5510
Port Graham, Alaska99603

Mr. Larry Evanoff
President
Chenega IRA Council
P.O. Box 8003
Chenega Bay, Alaska99574

Mr. Bob Henrichs
President
Native Village of Eyak
P.O. Box 1388
Cordova, Alaska99574

Ms. Esther Ronne
Chairperson
Qutekcak Native Tribe
P.O. Box 1467
Seward, Alaska99664

Mr. Gary Kompkoff
Village Chief
Tatitlek Village IRA Council
P.O. Box 171
Tatitlek, Alaska99677

Ms. Emelie Swenning
First Chief
Nanwalek IRA Council
P.O. Box 8028
Nanwalek, Alaska99603

Ms. Benna Mae Hughley
President
Valdez Native Tribe
P.O. Box 1108
Valdez, Alaska99686

Mr. Phil Anderson
Chief
Evansville Tribal Council
P.O. Box 26087
Bettles, Alaska99726

Mr. Sam Harding
Chief
Alatna Tribal Council
P.O. Box 70
Allakaket, Alaska99720

Mr. Andy Jimmie
Chief
Minto Tribal Council
P.O. Box 58026
Minto, Alaska99758

Mr. Simon Pollack
Chief
Allakaket Tribal Council
P.O. Box 50
Allakaket, Alaska99720

Ms. Elenore McMullen
First Chief
Port Graham Village Council
P.O. Box 5510
Port Graham, Alaska99603

Mr. Arne Hatch
President
Qutekcak Native Tribe
P.O. Box 1467
Seward, Alaska99664

Ms. Evelyn Beeter
President
Mt. Sanford Tribal Consortium
P.O. Box 357
Gakona, Alaska99586

Mr. Don Stevens
Chief
Stevens Village Council
P.O. Box 74016
Stevens Village, Alaska99774

Mr. Roy Totemoff
Chugach Regional Resources Commission
P.O. Box 114
Tatitlek, Alaska99677

Ms. Maranda Nelson
Chugach Regional Resources Commission
P.O. Box 952
Seward, Alaska99664

Mr. Vincent Evans
Chugach Regional Resources Commission
P.O. Box 8002
Nanwalek, Alaska99603

Mr. Jim Ujioka
Chugach Regional Resources Commission
P.O. Box 1981
Valdez, Alaska99686

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
411 West 4th Avenue
Anchorage, Alaska 99501
http://www.ak.blm.gov

TAKE PRIDE IN AMERICA

AUG 13 2004

Letter No.: 04-035-WW
Case File Serial No.: AA005847
Section/Stipulation: 1.7.3
Facility Code: F5020, F5060, F5080, F5090, F5095
DD.: N/A

PWS Regional Citizens' Advisory Council
Attn: John Devens
339 Hazelet Avenue
P.O. Box 3089
Valdez, AK 99686

Dear Mr. Devens:

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20040817-2

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Authorized Officer
BLM/OPM ADNR/SPCO

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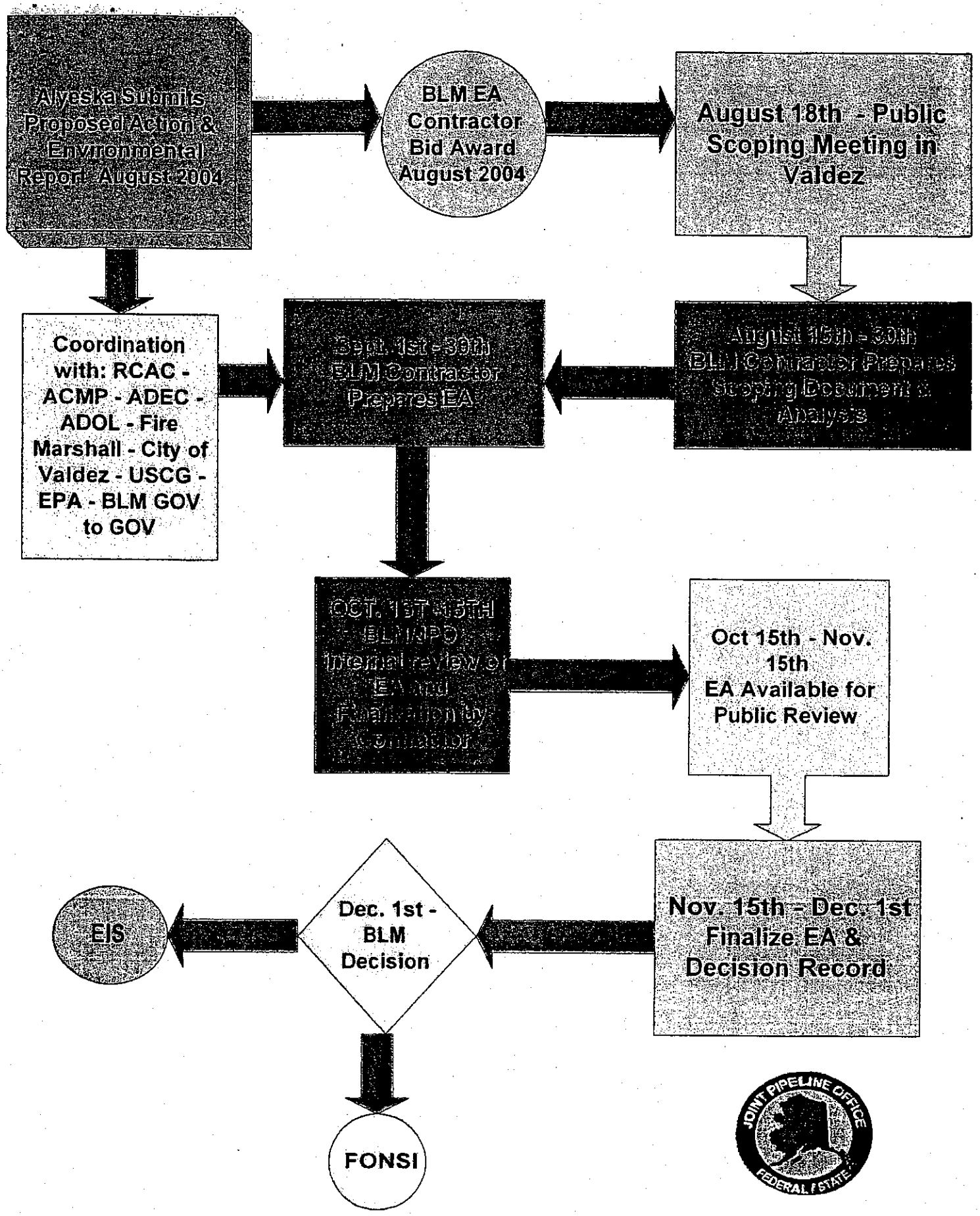

BLM's Environmental Assessment Process for Strategic Reconfiguration at the Valdez Marine Terminal

BLM FACT SHEET

VALDEZ MARINE TERMINAL STRATEGIC RECONFIGURATION

BLM NEPA REVIEW AND NOTICE TO PROCEED APPROVAL PROCESS

- BLM is conducting a National Environmental Policy Act (NEPA) review and analysis to evaluate the environmental effects of Alyeska's proposed action to reconfigure portions of the Valdez Marine Terminal.

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
411 West 4th Avenue
Anchorage, Alaska 99501
http://www.ak.blm.gov

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AUG 13 2004

Letter No.: 04-037-WW
Case File Serial No.: AA005847
Section/Stipulation: 1.7.3
Facility Code: F5020, F5060, F5080, F5090, F5095
DD.: N/A

U.S. Coast Guard
Attn: Commander Mark Swanson
USCG Marine Safety Office
105 Clifton Drive
P.O. Box 486
Valdez, Alaska 99686-0486

Dear Commander Swanson:

This a follow-up to our meeting with Lieutenant Commander Robert Bailey July 23, 2004 where we discussed JPO's plan for review and approval of Alyeska's Strategic Reconfiguration Project for the Valdez Marine Terminal and the upcoming BLM public meeting in Valdez, where members of the public may comment on the proposal. Alyeska has proposed the following changes at the Valdez Terminal, depending on TAPS Owner approval:

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20040817-4

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BLM/OPM ADNR/SPCO

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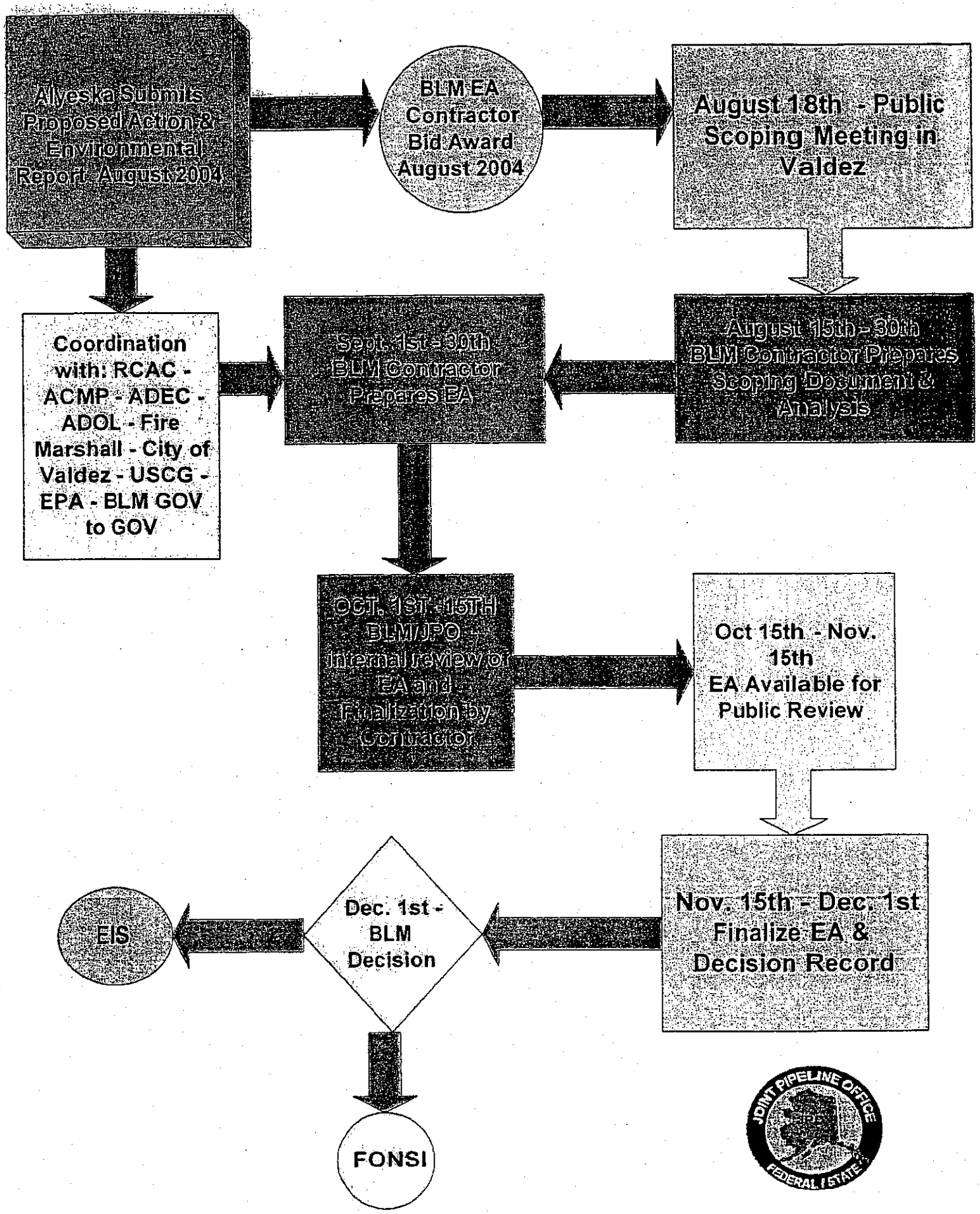

BLM's Environmental Assessment Process
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AUG 13 2004

Letter No.: 04-037-WW
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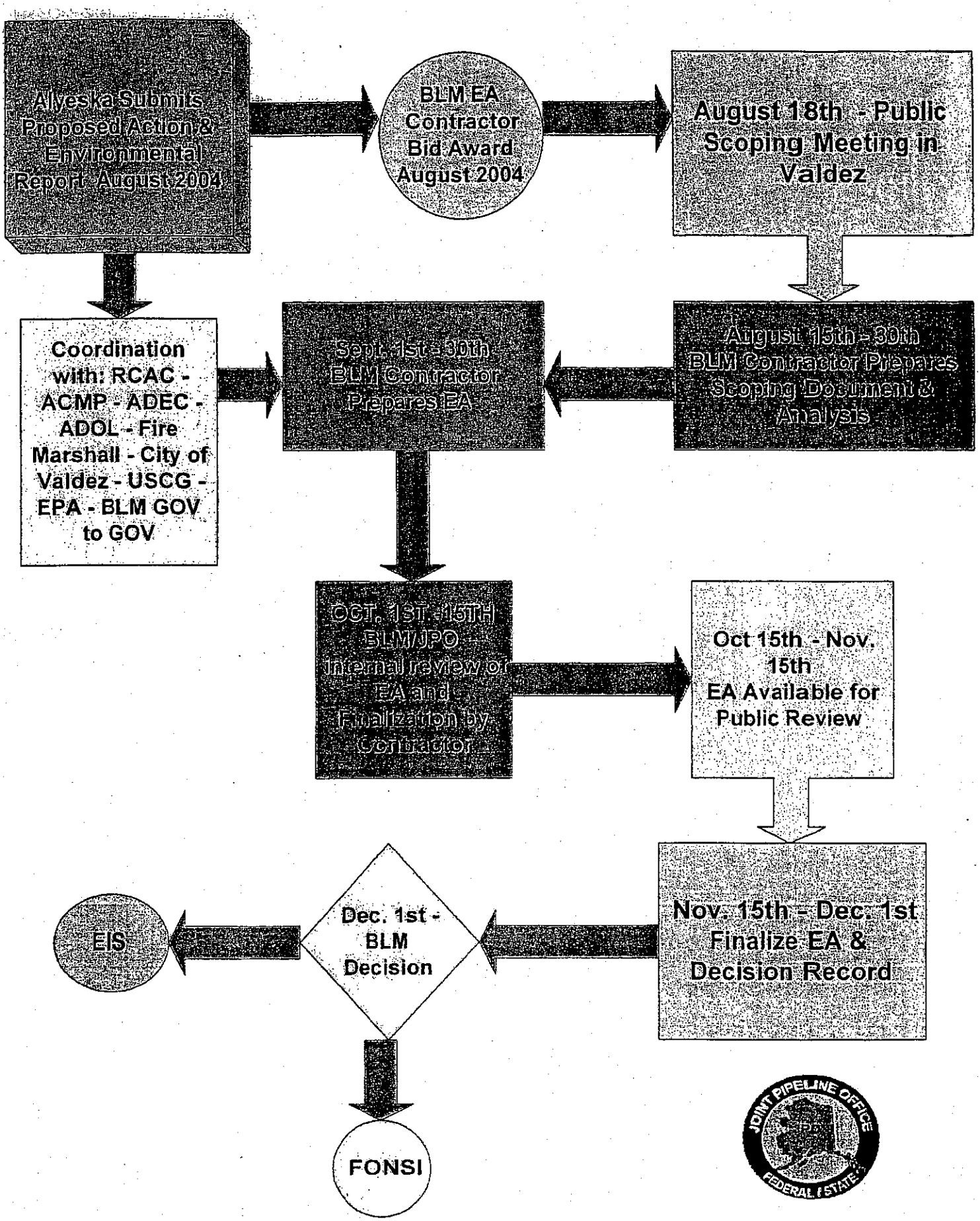

BLM's Environmental Assessment Process for Strategic Reconfiguration at the Valdez Marine Terminal

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TAKE PRIDE IN AMERICA

AUG 13 2004

Letter No.: 04-036-WW
Case File Serial No.: AA005847
Section/Stipulation: 1.7.3
Facility Code: F5020, F5060, F5080, F5090, F5095
DD.: N/A

Valdez City Hall
Attn: Dave Dengel
Box 307
Valdez, Alaska 99686

Dear Mr. Dengel:

This letter is to inform you of a proposal submitted to BLM from Alyeska Pipeline Service Company regarding the reconfiguration of TAPS facilities at the Valdez Marine Terminal, and JPO's plan for review and approval of Alyeska's project. We also want to inform you of an upcoming BLM public meeting in Valdez, where members of the public may comment on Alyeska's proposal.

Alyeska has proposed the following changes at the Valdez Terminal, depending on TAPS Owner approval:

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20040817-3

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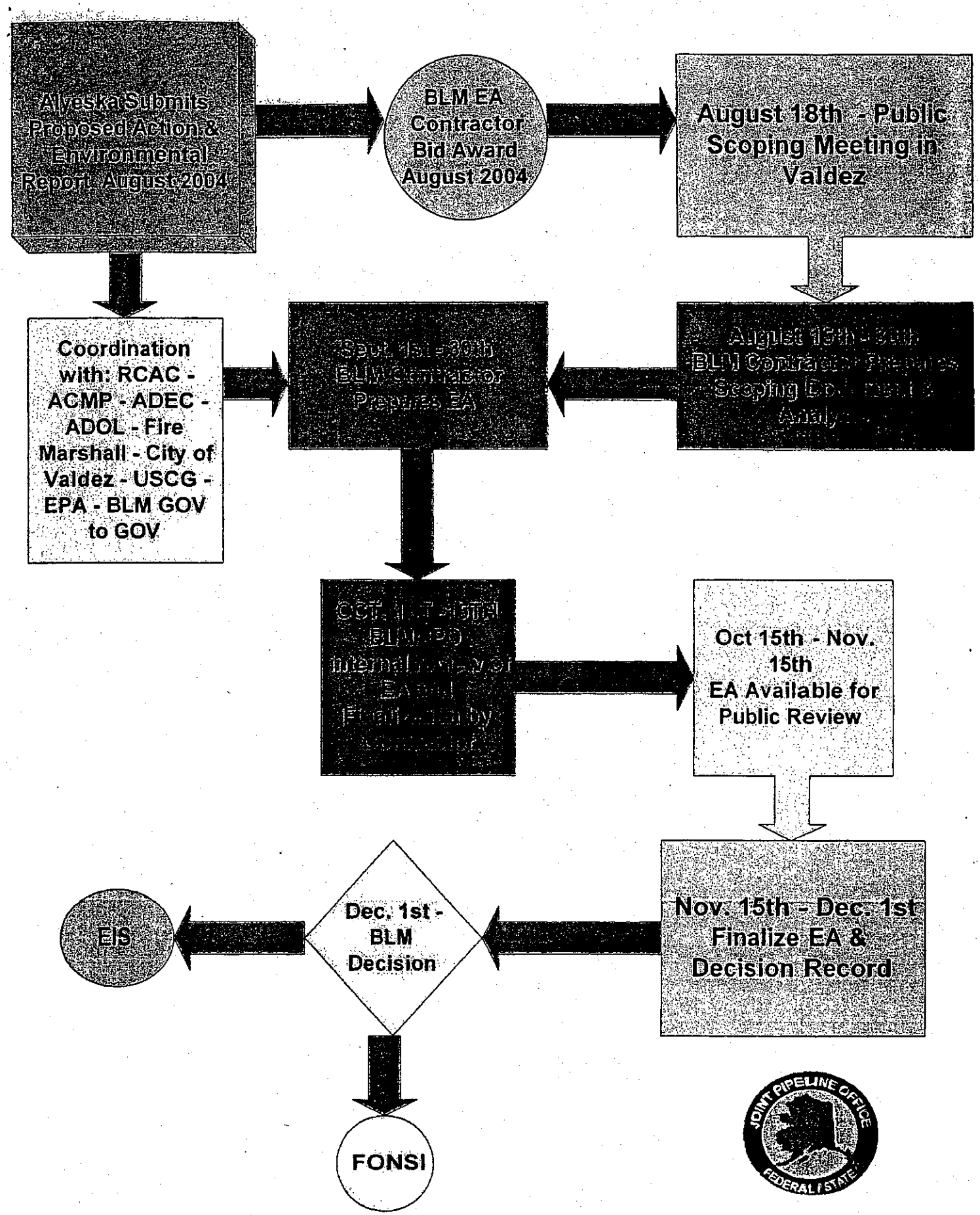

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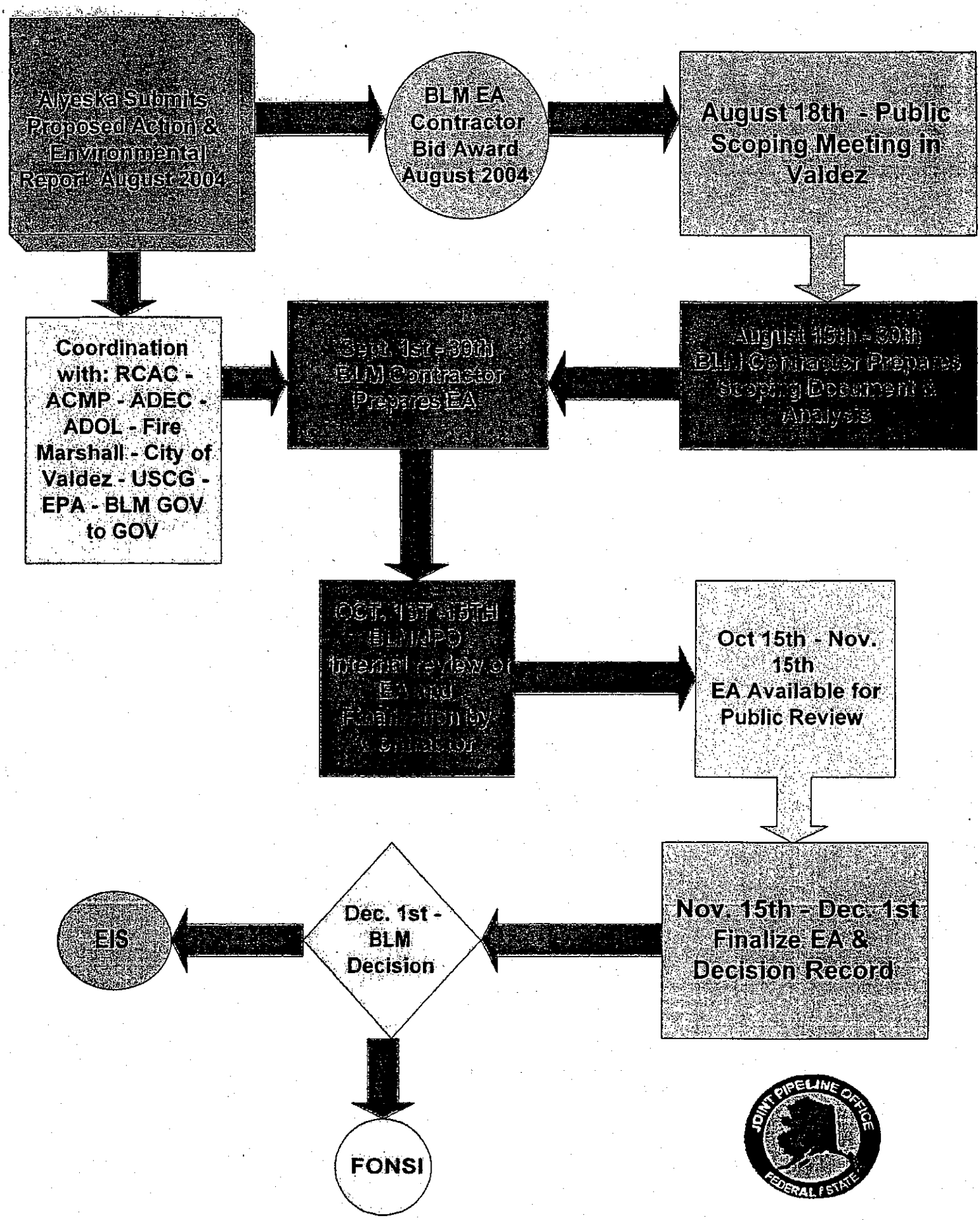

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TAKE PRIDE IN AMERICA

AUG 13 2004

Letter No.: 04-032-WW
Case File Serial No.: AA005847
Section/Stipulation: 1.7.3
Facility Code: F5020, F5060, F5080, F5090, F5095
DD.: N/A

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President
Valdez Native Tribe
P.O. Box 1108
Valdez, Alaska 99686

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- Replacement of existing pumped-seawater firewater supply system with a gravity flow freshwater supply system.
- Providing electrical power by connection to the commercial power grid and installation of an on-site backup diesel power plant or installation of on-site primary diesel power plant and backup.

Subsequent to the public meeting, the BLM at the Joint Pipeline Office will prepare an environmental assessment and issue an agency decision, either a Finding of No Significant Impact or a decision to do an environmental impact statement. This will be followed by JPO review and approval of the engineering designs and the notices to proceed.

We want to work with you to assure that your governing body and tribal members are fully aware of this proposal, the process we will follow in approving this project, and let you know that we welcome your input during this process.

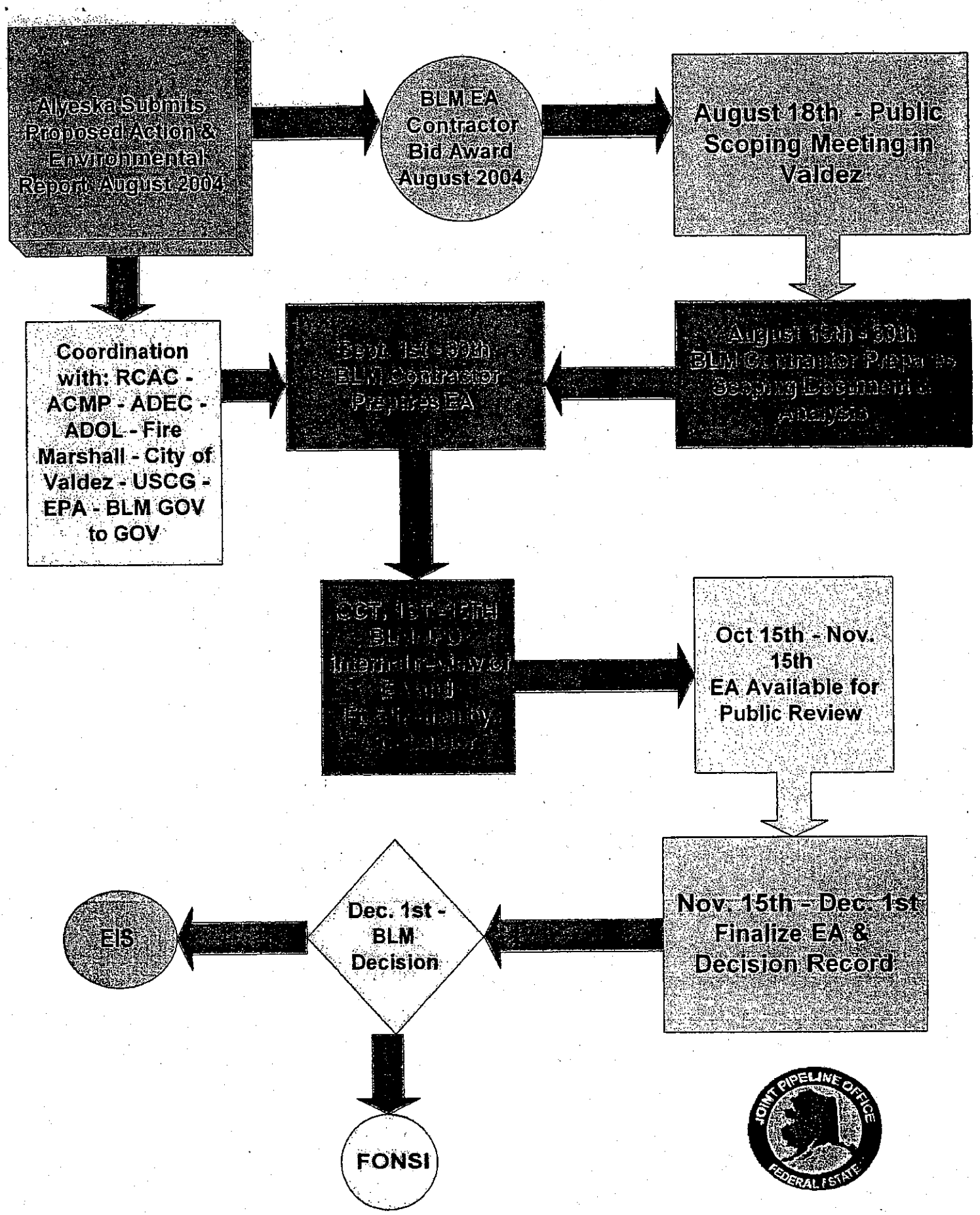
The public meeting is not the only opportunity for input and comment on the proposal. JPO will accept oral or written comments during our NEPA process that we expect to have completed by mid-October.

If you have any questions you may contact Lois Simenson at (907) 257-1344, or e-mail her at Lsimenso@jpo.doi.gov.

Sincerely,

Jerry Brossia
Authorized Officer
BLM/OPM ADNR/SPCO

Enclosure: Flow Chart for BLM's EA Process (1 Page)



BLM's Environmental Assessment Process for Strategic Reconfiguration at the Valdez Marine Terminal

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APPENDIX B

ANILCA SECTION 810 ANALYSIS OF SUBSISTENCE IMPACTS

ANILCA Section 810 Analysis of Subsistence Impacts

Subsistence Evaluation Factors

Section 810(a) of ANILCA requires that an evaluation of subsistence uses and needs be completed for any federal determination to "withdraw, reserve, lease, or otherwise permit the use, occupancy or disposition of public lands." As such, an evaluation of potential impacts to subsistence under ANILCA § 810 must be completed for the Strategic Reconfiguration of the Trans-Alaska Pipeline System, Valdez Marine Terminal. ANILCA requires that this evaluation include findings on three specific issues:

1. The effect of such use, occupancy, or disposition on subsistence uses and needs;
2. The availability of other lands for the purpose sought to be achieved; and
3. Other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes (16 USC § 3120).

This section sets out the evaluation and findings required by ANILCA § 810 for the proposed Strategic Reconfiguration based upon the information detailed in the Environmental Assessment. Section 3, on the Affected Environment, provides information regarding areas and resources important for subsistence use. Section 4 on Environmental Consequences analyzes impacts on resource populations and access by subsistence users, and was used to determine whether the level of effects from the Strategic Reconfiguration is extensive enough to cause a possible significant restriction to subsistence.

In determining whether the proposed Strategic Reconfiguration, including cumulative effects, may significantly restrict subsistence uses, the following three factors in particular are considered:

1. the reduction in the availability of subsistence resources caused by a decline in the population or amount of harvestable resources;
2. reductions in the availability of resources used for subsistence purposes caused by alteration of their normal locations and distribution patterns; and
3. limitations on access to subsistence resources, including from increased competition for the resources.

A significant restriction to subsistence may occur when an action substantially may reduce populations or their availability to subsistence users, and when an action may substantially limit access by subsistence users to resources.

If the preliminary evaluation and findings were to conclude that the proposed action may significantly restrict subsistence uses, then additional requirements are established in the statute. These include notice to the State and appropriate regional and local subsistence committees, a hearing in the vicinity of the area involved, and the making of certain determinations as required by Section 810(a)(3). For the proposed action to proceed, the Federal land manager would be required to determine that:

A. Such a significant restriction of subsistence uses is necessary, and consistent with sound management principles for the utilization of the public lands;
B. The proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition; and
C. Reasonable steps will be taken to minimize adverse effects upon subsistence uses and resources resulting from such actions.

ANILCA 810(a) Evaluations and Findings for the Strategic Reconfiguration and the Cumulative Case

A. Evaluation and Findings for the Strategic Reconfiguration

Section 3.13 describes subsistence uses of Tatitlek, Valdez, Chenega Bay, and Cordova, communities found in the vicinity of the Valdez Marine Terminal. Since Valdez is not a rural community, the local harvest activities of that community are not technically subsistence uses as defined in Title VIII of ANILCA. Tatitlek, Chenega Bay, and Cordova residents harvest subsistence resources throughout extensive subsistence uses areas centered on their communities. Subsistence uses by these three communities in the Valdez Arm area exist, but these represent a small and remote portion of the uses areas for these communities. The Strategic Reconfiguration includes the demobilization and removal of some structures and facilities, reducing noise and visual impediments and increasing access to the area. Section 4.1.14 concludes that the Strategic Reconfiguration would result in minor and short-term impacts on subsistence resources and access by subsistence uses.

Concerning the availability of alternative lands, the proposed Strategic Reconfiguration is intrinsically linked to the existing Valdez Marine Terminal. As a result, no alternative lands for the proposed activity are relevant.

Finally, as noted, the Strategic Reconfiguration would consolidate and reduce the existing infrastructure at the Valdez Marine Terminal, relevant to efficient transportation and storage of current level of oil production. No alternatives that further reduce the land use are feasible.

Considering the three factors together, the effects of the Strategic Reconfiguration on subsistence uses fall below the level of significantly restricting subsistence uses and needs. The Strategic Reconfiguration would not substantially reduce subsistence resource populations or their availability to subsistence users. The proposed action would not substantially limit access by subsistence users to resources

B. The Cumulative Impacts Case

Section 4.3 of the EA examines cumulative impacts, noting that in the Trans Alaska Pipeline Final Environmental Impact Statement, the BLM found that operations and maintenance changes and upgrades, such as the Strategic Reconfiguration were “not significantly distinguishable” from existing operations for the purposes of environmental review. Thus, the cumulative impacts analysis provided for the TAPS EIS already examined and reached conclusions on cumulative impacts, of which the Strategic Reconfiguration at the Valdez Marine Terminal are an indistinguishable part. The current EA is tiered from, and incorporates by reference the cumulative effects analysis of the previous TAPS FEIS. As a result, cumulative impacts to subsistence uses have already been identified, and compliance with the notice, hearings, and determinations requirements of Section 810 have already been assured.

C. No Further Compliance with Section 810 is Required.

With the conclusion that the proposed Strategic Configuration will not significantly restrict subsistence uses, no further steps are required for compliance with Section 810. Specifically, the BLM is not required to provide notice and hearings, under Section 810 (a)(1) and (2). Similarly, the BLM is not required to reach the determinations required under Section 810 (a)(3).