



4.6 Unavoidable Adverse Effects of Proposed Action

By L.D. Maxim and R. Niebo

This section contains information on the unavoidable adverse impacts that would occur if the proposed action were selected. *Unavoidable adverse effects* are considered impacts that are directly related to the proposed action and deleterious to the environment, the health of biological resources, and social systems. Specifically, the effects listed below refer only to impacts associated with the continued operation of TAPS. These effects have been distilled from direct and indirect impacts listed among the Physical Characteristics (Section 4.3.1), Biological Resources (Section 4.3.2), and Social Systems (Section 4.3.3) sections in this Environmental Report. Adverse cumulative effects are addressed in Section 4.5.

TAPS has existed for over 20 years and is now part of the affected environment. Thus, major construction-related impacts to landforms, soil, vegetation, waterbodies, habitat, and cultural resources have already occurred and in most cases have been mitigated.

Disturbance related to TAPS operations and maintenance will occur with material sites, corrosion digs, and potential pipe repairs and reroutes, but the disturbance will be much smaller compared construction impacts. Operation

of TAPS pump stations and the VMT will cause continuing discharges to water and emissions to air, but these will take place under regulatory permits and should not create significant effects on air or water quality. No population-level effect on any animals have occurred from TAPS operation and none are expected. Finally, the many positive economic and social effects of ANS oil production and TAPS operation will continue throughout the ROW renewal period, but will diminish in proportion to declines in production.

Thus, nearly all unavoidable adverse effects associated with TAPS renewal are minor and can be mitigated, and some effects have been positive. The one exception is a major oil spill to water such as could occur at the VMT or to a major river along TAPS. Serious impacts to the local environment and to biological and subsistence resources could occur but would likely be of relatively short duration (years). However, TAPS will operate under spill prevention and contingency plans approved by state and federal agencies. Major supplies of spill response equipment are available to combat any spill.

Table 4.6-1 identifies the unavoidable adverse effects.



Table 4.6.1. Unavoidable adverse effects of proposed action.

RESOURCE	UNAVOIDABLE ADVERSE EFFECT	REPORT SECTION
PHYSICAL CHARACTERISTICS		4.3.1
Paleontological Resources	<ul style="list-style-type: none"> Effects would result directly from excavations, pipeline relocation activities or oil spills. Since the location of buried vertebrate remains is unknown until an excavation begins, it is difficult to assess the severity of the potential. However, since TAPS is already in operations, most ground disturbance will be on land already disturbed by construction. 	4.3.1.1
Soils and Permafrost	<ul style="list-style-type: none"> Development changes soils and permafrost. However, since the pipeline and associated facilities have already been built, the current condition of soils and permafrost should remain largely unchanged. Future excavations, oil spills, and oil spill cleanups could adversely impact some soils and permafrost, resulting in the potential for minor thermokarsting. 	4.3.1.1
Sand, Gravel, and Rock	<ul style="list-style-type: none"> Though TAPS construction is complete, Alyeska will use approximately 100,000 cubic yards of sand, gravel and rock material per year for maintenance. Mining and gathering this material could result in minor adverse impacts on local topography, cause a loss of vegetation and soils, and alter drainage patterns. In most cases, materials will be mined from existing public and private mining areas or from existing stockpiles. 	4.3.1.1
Hazardous Materials	<ul style="list-style-type: none"> Hazardous materials may be spilled. To mitigate effects, hazardous materials are contained, used, and disposed of in accordance with regulatory requirements. There are 58 contaminated sites on the TAPS ROW. Half of these sites are either closed, requiring no further action, or are pending closure. 	4.3.1.1
Rivers and Floodplains	<ul style="list-style-type: none"> Effects could be caused by maintenance or construction of structures used to bolster and protect TAPS installations. For example, river and stream channels may need to be diverted to ensure the safety of a site. In general, these effects are minor when the behavior of the entire stream or river is considered and in most cases result only in a localized short-term change in stream morphology. 	4.3.1.1
Water Resources	<ul style="list-style-type: none"> Water will be needed to support operations and maintenance. Wastewaters, such as groundwater removed during excavations or construction, will continue to be treated, discharged, and assimilated by upland and freshwater receiving environments along TAPS. Marine waters of Port Valdez will continue to assimilate treated discharges from the VMT, including sanitary wastewater and ballast water. Discharges will be in accordance with permits under the Clean Water Act and may change but not adversely affect water quality. 	4.3.1.2
Atmospheric Environment	<ul style="list-style-type: none"> The atmosphere will continue to assimilate air emissions from TAPS pump stations. However, these emissions are in accordance with permits under the Clean Air Act. No known existing air quality impacts associated with TAPS have any serious effects on the health or welfare of humans or any serious detrimental effects on the environment. 	4.3.1.3
Global Climate Change	<ul style="list-style-type: none"> TAPS ROW renewal will not result in a net effect. 	4.3.1.4
BIOLOGICAL RESOURCES		4.3.2
Special Area, Special Management Zones and Zones of Restricted Activity	<ul style="list-style-type: none"> Due to the rigorous restrictions and permits required to perform TAPS activities in these areas, few, if any, unavoidable adverse effects are predicted to impact resources in SASMZs and ZRAs. 	4.3.2.1
Vegetation and Wetlands	<ul style="list-style-type: none"> Disturbance and displacement of vegetation takes place when pipeline sections are replaced or rerouted. This activity is expected to be infrequent since only three reroutes have occurred. Future disturbance to vegetation and wetlands is expected to be minimal. 	4.3.2.2



Table 4.6.1 (Cont'd). Unavoidable adverse effects of proposed action.

RESOURCE	UNAVOIDABLE ADVERSE EFFECT	REPORT SECTION
Vegetation and Wetlands (Cont'd)	<ul style="list-style-type: none"> Vegetation and wetlands are impacted by dust from TAPS activities, by water impoundments, by settling due to thermokarst, and by oil spills. The effect of dust on vegetation and wetlands is likely to remain the same as over the last 20 years. Water impoundments created by TAPS activities may continue to impact vegetation adjacent to the workpad on the Arctic Coastal Plain, but will be of only minor concern along the rest of the ROW, where natural drainages are more effective. Thermokarst impacts from impoundments, icings, and dust are likely to occur, with small amounts of additional settlement, but impacts to new areas should be negligible. Future maintenance work involving clearings could lead to minor thermokarst changes in surface thermal regimes. Vegetation and wetlands impacted by a large oil spill could be adversely impacted by the oil and the cleanup process. 	
Fish	<ul style="list-style-type: none"> Obstructions to fish movement are expected when construction activities impact streams. However, ADF&G regulations are followed to minimize the effect of obstructions to fish movement along TAPS. Minor fish mortality has been related to gravel mining and thermal irregularities caused by TAPS activities. Large oil spills to water could have sub-lethal or lethal effects on fish and their food resources in the immediate spill area. The effects would be greatest when spills coincide in time and location with migrating fish and overwintering areas. Pressure on fish populations could increase with harvesting due to continued access to remote areas. The effect can be mitigated by regulation and enforcement. 	4.3.2.3
Birds	<ul style="list-style-type: none"> Disturbance could be caused by equipment noise, vehicles, pedestrians, aircraft operations, boats associated with spill response drills, and other maintenance and operation activities of TAPS. Activities such as road traffic, brush clearing, and helicopter surveillance flights would have the most impact. Many of these activities are infrequent and disturb only a few birds. Bird habitats may be changed by TAPS activities. Activities that change snowmelt patterns, water impoundments, and vegetation could have either positive or adverse effects on birds, depending on the species. Mortality of birds from TAPS activities is minor compared to the entire bird population. Mortality can be caused by collisions with TAPS facilities and traffic, but these events have been infrequent. Large oil spills to water at the VMT could have an effect on bird mortality depending on the spill location and time of year. Birds rarely survive moderate to severe contact with spilled oil. Spills to land generally affect a limited area and have little or no impact on birds. Access would still be available for harvesting game birds, though firearm restrictions currently limit harvest by humans. 	4.3.2.4
Terrestrial Mammals	<ul style="list-style-type: none"> Terrestrial mammal populations are not significantly impacted by TAPS structures and activities. However, certain maintenance activities, such as helicopter surveillance flights, have caused short-term responses in individual animals. Though these effects are unavoidable and adverse, the reactions from individual animals are not realized within the entire herd. Consequently, no adverse effects regarding herd movement and distribution are predicted. Furbearers and small mammals will probably continue to be disturbed by pipeline maintenance activities, oil-spill drill activities, and oil spills. However, population-level impacts are not predicted. Oil spills from TAPS activities may cause disturbances in a variety of habitats. If future oil spills are similar to spills over the last 30 years, adverse effects are not predicted for terrestrial mammals. Access would still be available for harvest of terrestrial mammals though hunting restrictions currently limit harvest by humans. 	4.3.2.5
Threatened and Endangered Species	<ul style="list-style-type: none"> None expected. 	4.3.2.6



Table 4.6.1 (Cont'd). Unavoidable adverse effects of proposed action.

RESOURCE	UNAVOIDABLE ADVERSE EFFECT	REPORT SECTION
SOCIAL SYSTEMS		
Economy	<ul style="list-style-type: none"> The overwhelming majority of economic effects associated with the continued operation of TAPS are positive. Declining petroleum revenues for state government are predicted to lead to the reintroduction of a state personal income tax and reduction of the Permanent Fund Dividend. This will impact larger, lower-income families who rely on the PFD for income. 	4.3.3.1
Sociocultural Systems	<ul style="list-style-type: none"> None expected. 	4.3.3.2
Subsistence	<ul style="list-style-type: none"> Large oil spills to land and water could affect subsistence resources. Spills to water, depending on spill location and time of year, generally impact subsistence resources much more severely than spills to land. If access to subsistence areas is improved, use by recreationists, tourists, and sports hunters and fishers could cause conflicts between those who use the resources for subsistence and those who used them for recreation. Game management regulations, enforced by ADF&G and federal land management agencies, are expected to continue to mitigate access-related issues. 	4.3.3.3
Cultural Resources	<ul style="list-style-type: none"> Access to areas with potentially valuable cultural resources will continue during the renewal period. As material sites used for TAPS construction are developed, cultural sites may be affected by erosion. Ground-impacting activities such as corrosion investigations, slope/workpad maintenance, potential reroutes, mainline valve inspections, river crossing repairs, and repair and development of new material sites/rock quarries have the potential to damage cultural sites. However, most such activities will be on lands already disturbed by TAPS construction and with archaeological clearances. Furthermore, damage to cultural resources is mitigated by following Section 106 procedures. Cultural resource sites may initially be impacted by large oil spills and then be further disrupted by cleanup efforts. 	4.3.3.4
Land Ownership	<ul style="list-style-type: none"> None expected. 	4.3.3.5
Land Use	<ul style="list-style-type: none"> The continued use and improvement of the Dalton Highway allow non-residents to access lands near the TAPS ROW. This will result in use conflicts between visitors and private landowners, though federal and state land managers make every effort to alert visitors to private landowners' rights. 	4.3.3.6
Coastal Management	<ul style="list-style-type: none"> None expected. 	4.3.3.7
Recreation	<ul style="list-style-type: none"> None expected. 	4.3.3.8
Visual Resources	<ul style="list-style-type: none"> None expected. 	4.3.3.9
Wilderness	<ul style="list-style-type: none"> None expected. 	4.3.3.10
Transportation	<ul style="list-style-type: none"> None expected. 	4.3.3.11