TAPS ROW Renewal
1835 South Bragaw Street, MS-508, Anchorage, Alaska 99512
Telephone (907) 787-8882 FAX (907) 787-8322

August 20, 2002 APSC Letter No. 02-18961

BLM TAPS DEIS Comments
Joint Pipeline Office
411 West 4th Avenue, Suite 2
Anchorage, Alaska 99501

BLM TAPS DEIS Comments
Argonne National Laboratory
EAD/900 9700 South Cass Avenue
Argonne, Illinois 60439

Re: DEIS Review Comments Transmittal

Gentlemen:

This letter transmits the comments of the Trans Alaska Pipeline System (TAPS) owner companies in response to the July 5, 2002 Federal Register notice requesting comment on the Draft Environmental Impact Statement for the Renewal of the Federal Grant for the Trans Alaska Pipeline System Right-of-Way (the DEIS). We are pleased to offer these comments this date via courier to the BLM and to Argonne National Laboratory. Electronic and CD versions of these comments are also being sent to Argonne. Detailed section-by-section comments are attached in a matrix format, but we would like to highlight a few items that we believe are of special significance in the DEIS analysis.

The DEIS evaluates three alternatives for Grant renewal (including non-renewal) and concludes 30-year renewal is the preferred alternative. The TAPS owners concur in this finding and strongly recommend that it be retained as the preferred alternative in the Final EIS. Thirty-year renewal is both appropriate and necessary given the economic importance of TAPS to the country in general and the State of Alaska in particular. TAPS was created as the sole means of bringing North Slope oil to market and all the best information available indicates there is at least another 30 years of commercially producible reserves on Alaska's North Slope. TAPS has safely and reliably served this purpose for 25 years and is prepared to do so for the next 30.

Maintaining the proper focus for the Grant renewal EIS is also an important aspect of this process. While TAPS is an essential piece of infrastructure and Grant renewal is required for its continuation, renewal is only one piece of many processes that affect the continued operation of TAPS. The DEIS appropriately evaluates a wide variety of issues related to TAPS but eliminates others from detailed analysis. These issues are mentioned but not pursued because they generally are the subject of processes that are separate from and independent of the straightforward land use decision that underlies the renewal question. Section 2.5 of the DEIS properly identifies items raised during scoping - such as the Exxon Valdez litigation, Dalton Highway status, and DR&R tariff issues - as out of scope.

Among the items raised and considered but eliminated from detailed analysis in the DEIS is the concept of adding an advisory committee or citizen oversight function for TAPS. During the course of the public hearings on the Draft EIS a number of commentors spoke either in favor of or opposed to this concept and we believe, therefore, that some additional comment on this issue is appropriate.

First, we refer you to that portion of our scoping comments that addresses this point, a copy of which is enclosed and hereby incorporated into our formal DEIS comments. As our scoping comments note, Federal law does not favor the creation of formal citizen advisory functions. The Federal Advisory Committee Act (FACA) and the Congressional intent language creating this act make it clear that a genuine purpose and need for an advisory function must be established and an approval process completed before creation of the function is permitted. This rationale stems basically from the fact that public oversight is the responsibility of the government. The authority does not exist within the context of the right of way renewal process to establish such an advisory group nor to compel the TAPS owners to provide funding. It has, therefore, correctly been addressed as outside the scope of this decision process.

But, even if it were not, the rationale for creating an oversight function does not exist. In the case of TAPS, the Joint Pipeline Office, a consortium of state and federal agencies, has already been established to carry out TAPS oversight. Numerous opportunities for formal and informal public participation exist within the authorities included in the JPO as well as oversight provided by other state and federal agencies exercising jurisdiction over TAPS. In fact, many of the areas of concern commented on during the DEIS hearings, such as oil spill response plans, are the subject of other public processes. Finally, information about TAPS is widely and publicly available.

The TAPS owners appreciate this opportunity to comment on the Draft EIS. It is our hope and expectation that the preferred alternative and scope of the DEIS be retained in the Final EIS. TAPS exceptional environmental performance, aggressive maintenance program coupled with a comprehensive regulatory regime to oversee its operations support such a finding.

Sincerely,

W. Steven Jones
TAPS ROW Renewal Project Manager

Enclosures

cc: R. McWhorter, w/enclosures
J. Brossia, w/enclosures
J. Kerrigan, w/enclosures
G. Reimer, w/o enclosures
TAPS Owner Companies w/enclosures
S. Martin, w/enclosures

TAPS Owner's Comments

00098001

Regarding the sentence that begins "In the northern portion of Alaska, most. . ." the term "nonlocal hunters" should be clarified in order to not confuse readers between use of the terms "nonlocal" and "nonresident".

00098002

Sentence that starts "The number of mountain goats. . ." does not appear to be complete. Suggested edit: "The number of mountain goats that stay in. . .by the ROW, has increased. . .Highway, yet has declined. . ."

00098003

Typo -- citation should be Ballard and "Whitlaw", not "Whitelaw"

00098004

This paragraph would have better organization and flow more coherently if the description of the terrestrial portion of the Beaufort Sea were presented first in a separate paragraph. Suggest change: the portion starting on line 16 (i.e., "For this EIS, the terrestrial. . ." through to ". . .within this area.") and make it the first paragraph. Then the general description of the species in the study area becomes more relevant as the introduction's second paragraph.

00098005

Regarding the sentence "The reason for the dramatic decline of the adult moose population throughout the North Slope in recent years is not known."

1. It is questionable whether this statement belongs here in its current form. A more appropriate statement would include information recently published by Geoff Carol of ADF&G (see below for citation) stating the Colville River moose population is currently (since 1997) increasing in response to the population being below carrying capacity, browse recovery from moose and snowshoe hare overbrowsing, and the resulting improved moose body condition. In 2000, the Colville River moose population was estimated at approximately 650-700 moose (Carol 2002). I suggest this statement be updated to reflect current information or else deleted from the section.
2. If it is retained, the information presented in the existing statement needs one if not more citations. A citation is required for the decline. Use of the term "dramatic" is a red flag and needs to be carefully defined with a citation.
3. It is difficult to imagine that a decline would occur only in the adult segment of a population, but if this were the case, and researchers knew that calves were not declining and recruitment was satisfactory, then it seems they would surely know the cause of the decline.
4. The North Slope is a large area and naturally occurring moose habitat is limited and somewhat fragmented (i.e., that is why numbers are low at this northern edge of moose range). A citation is required to document and support the phrase "throughout the North Slope".
5. The phrase "in recent years" is also vague. Again, a citation is required to document and support this term.
Considering the above comments it is clear this statement is problematic and I suggest either deleting or expanding upon it with appropriate citations, including Carol (2002). It is not scientifically acceptable in its current form.

Carol, G. 2002. The rise, fall, and recovery of the Colville River moose population. Pages 3-5 in V. Crichton and G. Redmond, editors. The Moose Call, Vol. 14, April 2002. (See Argonne Document #3371)

00098006

General comment for this section:

1. The levels of detail for population, range and habitat use data presented in this section are not consistent among species. For example, why is the estimated size (in 2000) of the Porcupine herd presented (line 4 of paragraph 1 on page 3.21-16) in the middle of a paragraph that otherwise appears to discuss seasonal distributions and habitat use of the 4 North Slope caribou herds?
2. Then, in the 3rd paragraph on page 3.21-16, comments regarding portions of the Central Arctic herd ("small numbers" line 6 paragraph 3; "Census data indicate that about half of the Central Arctic herd tends. . ." line 13 paragraph 3) are presented with no mention of Central Arctic herd population estimates (current estimate or population growth since mid-1970s).
3. In contrast, bear (page 3.21-17 paragraph 5 lines 1-8) and fox (page 3.21-17 paragraph 7 lines 7-10) numbers and densities are discussed in greater detail.

Please resolve this discrepancy in levels of detail presented among species in the Beaufort Sea area. We strongly suggest you provide population data for the 4 caribou herds over time (Cronin et al. 1998).

00098007

The 1st sentence states "Other impacting factors include the potential alteration of animal habitats and migration patterns." This is a sound and reasonable statement. However, "potential" is removed from the next sentence, which therefore implies the "altered habitats and migration patterns" are a known fact with "continuing impacts on subsistence and on commercial and sport hunting and fishing." Suggest inserting the word "potential" into the 2nd sentence, allowing for the possibilities of these impacts, without presuming they occur in all areas under all circumstances.

00098008

Box entitled -- Impacts of Proposed Action on Birds and Terrestrial Mammals: This highlight box is very well written, concise and to the point.

00098009

Regarding the sentence that starts "There is no evidence that populations. . ."; the beginning clause is correct and scientifically based, as evidenced by the numerous citations, however, the second clause is misleading and should be edited. It is true that such impacts can be difficult to detect, but this has been presented in a better manner in other sections of the EIS (see page 4.3-54 paragraph 2 lines 15-16 with language ". . .may not be detectable above natural population fluctuations [ADNR 2000; MMS 1998])." I suggest rewording the closing phrase of this sentence with the above language. In addition, the current citation of Chardine and Mendenhall (1998) is a seabird citation and is not the most relevant or appropriate choice. I suggest using the previous citations of ADNR (2000) and MMS (1998).

00098010

Add Shideler and Hechtel (2000) to the citation string regarding anthropogenic food sources.

00098011

Regarding the sentence that begins "Brown bears generally avoid. . .", the citation to Ballard and Whitlaw (2002) is not the most appropriate. I suggest the entire sentence be reworded as follows "Although it has been demonstrated that some brown bears avoid areas within 300 ft of roads (McLellan and Shackleton 1988) this response has not been reported in the TAPS or Prudhoe Bay areas."

00098012

Regarding the sentence that begins "Disturbance is greater from helicopters. . .". Although this statement is generally true, there is great variation among species, environmental variables, etc. as stated in the previous sentence. However, the citation for this statement (Watson 1993) is a study of nesting bald eagles and is probably not appropriate for such a general statement. I suggest rewording the sentence to read "For example, Watson (1993) reported that disturbance to bald eagles was greater in response to helicopters as opposed to fixed-wing aircraft at

00098013

"285,600 al " should read "285,600 gal"

00098014

The DEIS states: "However, extended bulk storage of spill debris that has been determined by analysis to be hazardous waste is not addressed." This is unclear and appears to indicate a deficiency in plans that are prepared and approved on a site-by-site basis. The storage of bulk hazardous spill debris has been addressed in the State approved Oil Discharge Prevention and Contingency Plans.

00098015

"Control Valves 10 and 12" should read "Check Valves 10 and 12".

00098016

In addition to the air emissions permit issued by ADEC, there is an operations plan for treating contaminated soil that has been approved by ADEC under 18 AAC 75.365.

00098017

The Executive Summary contains no summary of the cumulative effects analysis. As this is an important component of the Environmental Impact Statement, a summary of findings should be included.

00098018

The discussion of the contribution of North Slope oil and TAPS to reducing the trade deficit is accurate and useful. However, many readers may not be aware of the significance of trade deficits in terms of everyday economics. We recommend that the DEIS provide an explanation of why a reduction of the trade deficit is beneficial.

One example of good general writing about the economic significance of current account deficits is found in the article, "How Returning Deficits Impact Main Street" (Cook, D. T., The Christian Monitor, July 19, 2002). Trade deficits contribute to current account deficits. As Cook notes,

"In the long term, federal budget deficits reach into voters' pocketbooks in a variety of ways, economists say. 'If the government is borrowing money, that means there is less available for private investment,' says Economy.com's Mr. Faucher. Eventually, that is going to mean we will have slower growth down the road."

Ultimately there are limits on the government's ability to borrow and government expenditures need to be reduced and/or the dollar must be devalued. Increased unemployment, slower growth, and higher interest rates (e.g., mortgage rates) for the average person (the equivalent of a tax for people with adjustable-rate mortgages) are some of the consequences of budget deficits.

00098019

After sentence ending in "(Table 3.23-7)," suggest adding the sentences "Nonetheless, petroleum revenues remain very significant to the State. In the year 2000, for example, the total revenues of nearly $2.4 billion were equivalent to more

00098020

(Please note: Graph for this comment could not be included in the database. For full comment, please see Argonne Document #3350)

Please provide some perspective on state expenditures by including the attached graph showing the 15 states with the largest expenditures per capita. Alaska tops this list -- and has for many years -- for several reasons, including relatively low population density, large size, harsh climate, and various unique social programs. The point is not to argue that Alaska's expenditures are inappropriate, but rather that these are -- for many reasons -- high in per capita terms. In order to support these relatively high expenditures it is necessary to find sufficient revenue.

00098021

This section does not address the many causes of social change -- including the effects of oil and gas development -- and also fails to address many of the relevant issues. Only alcohol and suicide are mentioned as problems.

The discussion is unbalanced; it fails to point out many of the positive aspects of social change among Alaska Natives, such as increased graduation rates (and increased GEDs) in schools (see the NSB 1998/1999 Economic Profile and Census Report) and increased percentages who understand or can speak native languages. There is also increased communications access (radio, telephone, cable television, and the Internet) and specific radio and television programs available for Alaska

This economic analysis of the proposed action and the no-action alternative in the DEIS incorrectly assumes that some unidentified means can be found to finance continuing state deficits without creating adverse impacts on the economy. In the DEIS analysis the Permanent Fund Dividend (PFD) is retained (even in the case of the no-action alternative) and state expenditures are permitted to grow even though revenues decrease gradually or abruptly. This assumption is simply wrong.

The most useful and straightforward approach would be to examine the effects of balancing the state budget by reducing expenditures to match available revenues. The economic consequences of this assumption would include a substantial (and abrupt in the case of the no-action alternative) reduction in state (and local) services, reduced state and local government employment, and other consequences (unemployment, recession) that would directly follow. This case is easy to evaluate and understand. (Other options are noted below.)

In the year 2000 oil and gas revenues contributed approximately $2.4 billion to state revenues (see Table 3.27-7), equivalent to more than $3,800 per person. According to projections made by the Alaska Department of Revenue (Revenue Sources Book, Spring 2002), the state's budget gap is estimated to be $963.4 million in the fiscal year starting on 1 July 2002 -- a number projected to grow to more than $1 billion in fiscal year (FY) even with continued oil and gas revenues and flat state expenditures. If these revenues were to decrease (as would occur under the proposed action alternative) or terminate abruptly (as would occur under the no-action alternative), then this gap would grow. To eliminate this gap the state will have to sharply reduce expenditures, increase taxes, sell off assets, decrease or eliminate the PFD or implement some combination of these measures in order to balance the budget.

The DEIS notes that it is difficult to forecast the specific mix of actions that would be taken by the state to solve the resulting budget crisis (a reasonable statement), but then assumes that the budget can remain unbalanced indefinitely -- an unreasonable assumption.

The TAPS Environmental Report (TAPS Owners, 2001) made the assumption that, among other things, the state would eliminate the PFD in order to reduce the budget gap. Many would agree with this choice: the most recent Revenue Sources Book (Spring, 2002, p. 50) notes that "reducing [the PFD] would have a smaller overall [adverse] economic effect on the Alaska economy than a personal income tax or sales tax." If the DEIS authors believe that this would not occur, then the DEIS must evaluate some other means to bring revenues and expenditures into balance.

As noted above, one straightforward approach is to examine the effects of balancing the state budget by reducing expenditures to match available revenues.

Alternatively, the analysis in the DEIS can be modified to include both expenditure reductions and the imposition of a tax to eliminate the budget deficit. A combination of budget reductions and increased taxes may be more attractive (thus more likely) than eliminating deficits by expenditure reductions alone. However, evaluating a mix of expenditure cuts and increased taxes is more complex because additional assumptions need to be made (e.g., sales or income tax, whether progressive or not, balance between cutbacks and taxes). Candidate taxes (type, amount, and provisions) can be found in the Department of Revenue, Revenue Sources Book.

Whether budget cutbacks, taxes, or other measures are ultimately evaluated, the

assumptions made in the DEIS must be modified to provide a realistic estimate of the economic effects of the proposed and no-action alternatives. The economic impacts projected in the DEIS are erroneous even in the case of the proposed action

alternative. These errors are even greater for the no-action alternative.

00098023

The fact that using domestic oil from the North Slope, produced at a real economic cost less than the price of purchasing imported crude, makes the US economy richer should be explained and highlighted. The point is that for each NS barrel, the US uses resources equal to the cost. For each imported barrel, the US must expend real economic resources equal to the price.

00098024

Because it is no longer the marginal supplier of West Coast refineries, North Slope oil does not impact the price of crude or product on the West Coast through the quantity supplied. It is not cheaper on the West Coast because it is closer than other sources of supply because the market is a net back market. All crude of the same characteristics has the same price at the refinery. Its price differs from other West Coast crudes because of quality differences.

00098025

Delete "resulting in a swampy area" substitute "possibly due to construction impacts." Delete "Keyes 2002" cite and use original study. (Reference: MP 735 Aboveground Pipeline Assessment, Michael Baker, Jr., Inc., December 2001 (See Argonne Document #3349)).

00098026

The discharge diffuser for the Valdez Marine Terminal sanitary sewer is located offshore of the VMT but is not located "near the bottom of the fjord" as stated.

Suggest the wording be changed to ". . .through a diffuser located offshore northwest of the Marine Contingency Building."

00098027

Effluent limitations for the Valdez Marine Terminal outfalls should include BTEX.

00098028

The top graph incorrectly identifies the dates of the VMT NPDES permit renewals. The correct dates are June 1989 and May 1997.

00098029

The term "segregated ballast" is used in error. Delete "segregated". The BWTF does not treat segregated ballast.

00098030

Refer to the sentence that reads: "Depending on the texture of the soil material, a saturated soil may become liquefied when it is subjected to sudden movements such as a strong earthquake." It is suggested that the sentence be modified as follows to be accurate:
"A thawed, loose granular soil deposit located below the water table may liquefy when it is subjected to sudden movements such as a strong earthquake."

Liquefaction can occur only in a rather narrow range of geologic and soil environments characterized by granular soils that remain loose and uncemented after deposition during recent geologic time (modern or late-Quaternary eras) and that lie beneath a shallow ground water table. Quite often, permafrost has a high silt content, which would preclude liquefaction.

This comment also refers to Table 3.4-3 found on Page 3.4-6.

In this paragraph, it seems that a comparison is being made between the peak ground accelerations (PGA) from the USGS Open File Report 99-36 by R. L. Wesson et al. and the TAPS ground motion criteria. The USGS PGA values from the Wesson report serve as a basis for the USGS seismic hazard contour maps of spectral acceleration used in the International Building Code (IBC) 2000. While it might seem appropriate to compare these numbers with the TAPS seismic criteria, it actually is not, because the two sets of numbers were derived for different event recurrence intervals. The PGAs from Open File Report 99-36 are for a "Maximum Considered Earthquake", which has a probability of non-exceedance of 2% in 50 years, or an approximate recurrence interval of 2,500 years. The TAPS criteria were originally intended to represent a recurrence interval of approximately 300 to 500 years, but recent assessments indicate that the recurrence interval probably varies from 500 to 1,000 years for various areas along the 800-mile route.

It is important to recognize that the two sets of numbers are used differently in the design process. The IBC 2000 starts with spectral coefficients for the 2,500 year earthquake, but multiplies these numbers by 2/3, further modifies them to account for site specific soil conditions, and divides by a reduction factor of approximately 1.5 to 8 depending on the amount of ductility and energy dissipation that can be mobilized by the type of structure being designed. The TAPS ground motions are multiplied by amplification factors to obtain spectra and then factored to account for ductility and energy dissipation. In addition, both the IBC 2000 and TAPS procedures apply different load factors to the various possible load combinations that include seismic load components. Thus, the respective processes used to develop design loads are quite dissimilar, and consequently, it is not possible to compare PGAs this way.

The only meaningful way to compare the PGAs from Open File Report 99-36 to the existing TAPS seismic ground motion criteria would be to run each set of numbers through the respective design processes, i.e., IBC 2000 vs. the TAPS seismic design criteria, and compare the resulting design loadings. This would be formidable task, which we believe is beyond the scope of the EIS.

In conjunction with plans to update seismic design specifications to a form consistent with IBC 2000, APSC has commissioned a probabilistic seismic hazard assessment (PSHA) of the pipeline route. The results of this study will be used to determine input seismic design coefficients for the updated seismic specifications. It is expected that the net seismic design requirements will not differ substantially from the requirements imposed by the existing TAPS seismic criteria, albeit the design procedure itself will be modified to be consistent with IBC-2000. The last such review of Alyeska seismic criteria was conducted in 1994-95. (See Argonne Document #3096: Reassessment of Seismic Design Criteria for the Trans-Alaska Pipeline, December 1995, Rev. 1) It also included a PSHA, and it was concluded that the originally specified TAPS seismic criteria were adequate in the high seismic areas along the route, and conservative in the low to moderate seismic areas.

00098032

Refer to the sentence that reads: "Within 10 minutes of when alarms are sounded, shutdown will begin automatically unless the operator intervenes on the basis of his interpretation that the alarm was falsely initiated." It is suggested that the sentence be replaced as follows:

"If the pipeline controller fails to acknowledge seismic alarms within 10 minutes, automatic shutdown of the pipeline will commence. This automatic shutdown process is intended to guard against the possibility that the operator is unable to respond to the seismic alarm condition."

Note: The pipeline controller will determine the need for shutdown through his/her review of alarm displays, which includes seismic, leak detection, etc. If an emergency condition is determined to exist, shutdown will be initiated by the controller long before the 10-minute time-out period.

00098033

Change " . . . was upgraded to a conventional aerobic secondary treatment that uses a small mechanically activated sludge plant." To: " . . . was upgraded to a conventional aerobic secondary treatment process by addition of a small mechanical activated-sludge plant."

00098034

Discrepancy in volumes. "Maximum annual volume . . . was 3.8 gallons in 1991" in paragraph 6. Total for 1996 and 1997 was 7.8 million gallons of hydrostatic test water. This is more than double the "maximum annual volume".

00098035

Confining unit usually overlies the aquifer. The text should read "The underlying permafrost forms a confining unit for the subpermafrost aquifers."

(Please note: Tables for this comment could not be included in the database. For full comment, please see Argonne Document #3355)

Four of the seven possible impacts noted in the bullet points in these paragraphs address the possibility of competition between subsistence users from sport anglers or hunters. Sport hunters/anglers are alleged to use "improved technologies" and are facilitated by increased access. Cumulative effects are claimed to include competition from "outsiders" and new Alaskan residents attracted by economic opportunities associated with the proposed action and other reasonably foreseeable actions.

This discussion in the DEIS is incomplete. It fails to address the priority accorded subsistence users in both state and federal law and the game and fishery management options available to mitigate any conflicts between sport and subsistence users.

Wolfe (2000) notes that:

"Subsistence uses of fish and land mammals are given a priority over commercial fishing and recreational fishing and hunting in state and federal law. This means that when the harvestable portion of a fish stock or game population is not sufficient for all public uses, that subsistence uses are restricted last by regulation."

In the event that oil and gas development and other projects were to result in competition that lowered or threatened to lower the harvestable portion of the fish stock or game population to levels insufficient to accommodate all users, it is the obligation of state and federal authorities to restrict other users in order to satisfy the needs of subsistence users and to distinguish among subsistence users. Because of this subsistence priority, it is impossible in principle for competition from nonsubsistence users to adversely impact subsistence users. In practice, however, fish and game management decisions have not always favored subsistence users.

The following discussion provides relevant information that should be added.

Suggested Insert:

Subsistence Priority

The history of subsistence management in Alaska is discussed elsewhere in the DEIS (see Section 3.24 for a useful chronology regarding subsistence law and policy in Alaska). The Alaska Department of Fish & Game (ADF&G), under the direction of the Alaska Board of Fisheries (BOF) manages sport, commercial, personal use, and State subsistence harvest on all state lands and waters throughout Alaska. Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA) requires that the Secretary of the Interior and the Secretary of Agriculture implement a joint program to grant a preference for subsistence uses of fish and wildlife resources on public lands and waters in which there exists a federal reserved water right. Detailed subsistence regulations applicable to these lands have been published (see e.g., 67 Federal Register 26, pp 5890 – 5906, see also USEPA, 2001, 2002).

Additionally, certain international agreements empower other bodies (e.g., the International Pacific Halibut Commission) to establish overall harvest limits for certain species (Hamel et al., 2000, Herrmann et al., 2001) in designated waters (e.g., the North Pacific, Gulf of Alaska, and eastern Bering Sea), but authority to allocate

catches among commercial, sport fish, and subsistence users is delegated to the individual nations.

Notwithstanding the issue of how subsistence users should be defined (a complex subject), the laws, of the State of Alaska provide a preference for subsistence hunting and fishing uses (Burr, 2001).

Table 1 provides excerpts from the Alaska Statues (AS 16.05.258 Subsistence Use and Allocation of Fish and Game) that clearly spell out the responsibilities of the BOF (and corresponding Board of Game) in managing Alaskan fish and game resources. The decision logic clearly reflects a subsistence priority (text emphasized in italics in Table 1) over other uses of stocks/populations under various supply-demand circumstances including, (1) if the harvestable portion of the stock or population is sufficient to provide for all consumptive uses, (2) if the harvestable portion of the stock or population is sufficient to provide for subsistence uses and some, but not all, other consumptive uses, (3) if the harvestable portion of the stock or population is sufficient to provide for subsistence uses, but no other consumptive uses, and finally (4) to distinguish among various subsistence users if the harvestable portion of the stock or population is not sufficient to provide a reasonable opportunity for subsistence uses. The language in this statute is unambiguous -- there is a clear mandate in state law to favor subsistence users (subsistence users here are defined first as all Alaskans, then in the case of Tier II are defined more restrictively).

Notwithstanding the plain meaning of the state's subsistence law the legal and political history of the management of fish and game resources has left many Alaska Natives believing that rural subsistence users are not accorded priority and that "the system is broken" (Shively, 2002).

State Management Practices

This section provides an overview of the administrative mechanism by which the state regulates fisheries (and game resources) and identifies specific management practices used for this purpose.

Administrative Mechanisms

-Fishery

The BOF consists of seven members appointed by the governor and confirmed by the Legislature. The BOF sets fishery regulations and harvest levels, allocates fishery resources, and approves or mandates fishery conservation plans for the state (Burr, 2001). The BOF receives technical assistance from ADF&G personnel and input from numerous local fish and game advisory committees. For example, the North Slope Borough (NSB) formed a North Slope Borough Fish and Game Advisory Committee that provides citizen input to the BOF relative to fish and game management (Burr, 2001) in that area. (This same committee provides input to a corresponding Board of Game [see below] relative to game management.)

The operating schedule at present entails BOF consideration of area-specific issues on a three-year cycle. Proposals for regulatory action and management plans are received for evaluation/approval by the BOF from ADF&G and members of the public—any Alaskan can submit a proposal to the BOF (Burr, 2001). As part of its deliberations the BOF receives input in the form of oral and written testimony from various groups including ADF&G personnel, members of the general public, members of local advisory committees, and others such as angler clubs. Proposals are accepted by majority board vote, reviewed by ADF&G, confirmed by the

Commissioner of ADF&G, approved by the Attorney General, and filed by the Lieutenant Governor before being implemented by ADF&G.

For time critical issues not adequately covered by existing regulations, ADF&G is empowered (Alaska Administrative Code [AAC] 05 AAC 75.003 Emergency Order Authority) to issue an Emergency Order (EO). This portion of the code (055 AAC 75.003) states in part:

"The department [ADF&G] may, by emergency order, change bag and possession limits or alter methods and means in sport fisheries. These changes may not reduce the allocation of harvest among other user groups."

Emergency orders are used to correct a situation until it is resolved or formally addressed by the BOF.

-Game Management

The state Board of Game (BOG) serves the same function for game management as the BOF for fishery management. The seven BOG members are appointed and confirmed in the same way and the administrative mechanism (process, advisory committees, etc.) is also identical. The BOG (by majority vote) may adopt, amend, repeal, or take no action on such matters as trapping/hunting seasons and bag limits, elimination of tag fees, restrictions on methods and means (e.g., snare restrictions, use of snowmachines, bear baiting, muzzleloader seasons, bow seasons, archery equipment, and restrictions in use of aircraft), hunter education requirements, and the establishment of restricted areas and game management units (GMUs). BOG decisions are reported in a Summary of Actions report issued after each meeting. ADF&G may also issue Emergency Orders for game management.

Specific Management Options

State authorities employ a variety of measures to manage fish and game resources.

-Fishery Management

Fishery managers employ a variety of options to ensure that adequate stocks are available (supply management) and/or to allocate available stocks among various users (demand or harvest management). On the supply side, fish hatcheries can be used to augment wild resources. Hatcheries are used to augment stocks of salmon and certain other species (see e.g., Arvey, 1991; McNair, 2002; State of Alaska, Governor’s Office, 2002; ADF&G, 2001) such as Arctic grayling and Arctic char. To date, hatchery augmentation has not figured importantly for many of the waters in the vicinity of the TAPS right-of-way (ROW)—at least at the northern end (Arvey, 1991; Burr, 2001). However, some believe that increased hatchery augmentation of native stocks in interior Alaska is a viable option (Fairbanks Chamber of Commerce, 2002). A resolution passed by the Fairbanks Chamber of Commerce, for example, supports a hatchery for interior Alaska and claims (as one justification) that this would accommodate any increased numbers of residents and anglers associated "with the development of the missile defense program, deployment of the Interim Brigade Combat Team at Ft. Wainwright, and future development of ANWR and a gas line."

There are numerous demand-side or harvest-side options for fishery management in use in Alaska. These include placing direct or indirect limits on either catch or harvest by various users for some or all species. Table 2 identifies many of these demand-side measures and provides illustrations of each taken from applicable

Alaska sport fishing regulations for the year 2001. Table 2 presents a broad range of options that provide great flexibility for fishery managers to satisfy the Alaska subsistence priority.

Each of these options has advantages and disadvantages, circumstances under which it might be appropriate, and enjoys a varying amount of support among sport anglers or subsistence users. Catch and release or selective harvesting, for example, enables anglers to enjoy the fishing experience without excessively depleting stocks. Catch and release is one of the techniques employed by the BOF (see footnote 1 below) endorsed by many Alaska outfitters/lodges/guide services that cater to visiting anglers, and regional and national sportfishing organizations. Those opposed to catch and release are concerned over fish injury or mortality (see footnote 2 below) and (particularly among Alaska Natives) those who believe that this practice is disrespectful and violates traditional values (see footnote 3 below). ADF&G (Timmons, 1991) has done a limited amount of survey work on opinions and regulatory preferences of holders of sport fishing licenses regarding various regulatory options.

Several references provide illustrations of how data are collected and analyzed to support the development of regulations and/or to integrate fishery management in the planning process (see e.g., Parker, 2001; Alaska Department of Natural Resources, 2002). Nonetheless, as indicated elsewhere in this DEIS, subsistence data are incomplete.

The BOF has proactively managed fishery issues in the vicinity of the TAPS right-of-way. Sportfishing was closed for five miles on either side of the pipeline beginning in 1978 to prevent rapid fisheries depletion by construction workers and others along TAPS (Arvey, 1991). More recently, the opening of the Dalton Highway to public travel in 1994 prompted additional regulations including a reduction in bag limits for northern pike and Arctic grayling and in a no-harvest regulation for lake trout within the highway corridor (Burr, 2001).

-Game Management

Game managers employ a variety of regulatory tools to ensure that the resource is adequate to support subsistence needs or at least minimize the effects of competition with sport hunters/trappers.

Table 3 identifies many demand-side measures that are used to minimize any adverse effects of sport hunting/trapping. These include closing areas to sport hunting/trapping (see footnote 4 below), setting bag limits, defining controlled use areas (CUAs), placing limits on the hunting technology employed, and establishing registration or drawing permit hunts. Details and examples of each of these measures are provided in Table 3. As with the fishery management options summarized in Table 2, game management options provide great flexibility.
Notwithstanding the state's legal subsistence mandate and available regulatory tools, some believe that the state has not discharged this responsibility efficiently -- at least in connection with wildlife resources. Even when the rural priority was included in the state's subsistence law, the differences between hunting regulations for sport and subsistence users were small according to one analysis by the Division of Subsistence of ADF&G (1990):

"Although subsistence priority existed in law, in practice subsistence hunting regulations were quite similar to resident hunting regulations, at least from 1978 to 1989. Methods and means regulations were virtually identical for nonresident, resident, and subsistence hunts. Seasons and bag limits were similar for most

resident and subsistence hunts.

But in some areas where demand for wildlife was high, subsistence hunters did

enjoy longer seasons, higher bag limits, or other advantages over resident hunters for selected species. . . Subsistence regulations provided 8,160 potential hunting days for caribou statewide (the total of all the open subsistence hunting seasons in all the game management subunits). Resident regulations provided 7,500 hunting days, or 8 percent fewer. Resident moose hunts had 14 percent fewer hunting days compared with subsistence hunts. Resident sheep hunts had 24 percent fewer hunting days."

This same analysis (ADF&G, 1990) related a cautionary tale of the Nelchina caribou herd:

[Because of highway developments and post-World War II population growth the Copper Basin was opened and exposed to hunting and fishing pressure by urban Alaskans. The Nelchina caribou herd became the most easily accessible caribou for both Fairbanks and Anchorage area hunters.]

"Fortunately, during the 1950s and 1960s the Nelchina caribou herd was growing just as the urban populations (sic) was growing. So although the number of hunters on the Nelchina kept growing, the hunting regulations were quite liberal. By 1971, the caribou season was open from August 10 to March 31, and each hunter could take four caribou.

Then, in 1971-72, the Nelchina herd crashed. Whereas in 1971 hunters killed 10,131 caribou, in 1972 the entire herd was estimated to include only 7,842 animals.

In 1972, the season was reduced from eight months to 40 days; the limit from four to one. Harvested (sic) declined to 555 animals in 1972. But in 1976 when 1,807 hunters took 822 caribou in the first five days of the season, biologists closed it by emergency order.

The Nelchina caribou herd simply could not meet the increasing demand. So in 1977, the Alaska Board of Game directed the Department of Fish and Game to award 750 permits in a random drawing. Anyone could apply; a $5.00 fee was required. The drawing permit system remains in effect today [1990]. The Nelchina caribou herd has grown since 1971 so the number of permits has grown to 2,230."

Although this system allowed the Nelchina herd to recover, it required court action to force the Board of Game to develop a subsistence drawing permit hunt (ADF&G, 1990).

As a second example of how the state management system did not always exercise its authority to protect the interests of certain subsistence users, the Division of Subsistence (ADF&G, 1991) relates a story of confusion in the wake of the State Supreme Court decision to strike down the rural subsistence priority as unconstitutional. Effects noted included postponed decisions and reduced subsistence seasons and bag limits made necessary by the substantial increase in the number of possible subsistence users that followed from elimination of the rural priority.

However, this same source (ADF&G, 1991) also noted that the state Board of Game created 15 Tier II subsistence hunts during the emergency August 1990 season, due to the increased pressure from urban residents hunting under subsistence regulations. As noted:

"Tier II hunts are required by law when there are too many hunters for the resources. For these 15 hunts, non-resident hunting was eliminated. Resident sport hunting was eliminated. Subsistence hunting was allocated to individuals (sic) hunters

through a complex point system which measured the hunter's level of dependence and proximity to the game population."

In this case, the management system worked as intended.

Alaska Natives and rural Alaskans are concerned that game regulations have not always been tailored to ensure a real subsistence preference. Among other concerns, they believe that broadening the definition of a "subsistence user" effectively created more competition and that (even though an administrative mechanism--the Tier II permit--exists to address this situation) the BOG has not accorded sufficient priority to rural residents. Moose, for example, are much sought after by rural hunters (and others). Hicks (1995) provides the following information on moose hunting regulations in game management subunit 26B (a portion of the North Slope):

"Beginning in 1990, all Alaska residents qualified as subsistence users under state law. To compensate for the large increase in hunters eligible for the subsistence season, the season was shortened to 5 -- 15 September and 1 November -- 31 December, and the one-bull bag limit was extended to all hunters. Additionally, a 50-inch minimum antler size was established for nonresidents."

Although the BOG had other options that would favor local subsistence hunters (Tier II hunt), this action was taken which effectively lowered their probable harvest.

-Equity Issues

The above discussion makes clear that existing Alaska law provides a mechanism to accommodate the needs of those dependent upon a subsistence lifestyle and that the BOF/BOG have an array of useful means to ensure that this is the case. A controversy exists as to whether or not these administrative tools have been consistently employed to achieve this objective:

-- Rapid population growth in urban areas during the 1970s led to increased competition for fish and game resources between Alaska Natives and other Alaskans (see footnote 5 below).

-- Urban and nonsubsistence interests are alleged to have dominated the State fish and game boards, leading those boards to favor sport and commercial users over those the State designated as subsistence users. For example over fishing of salmon in the Copper River, largely by residents of Anchorage and Fairbanks, led the BOF to allow fishing in the river on only two days, Saturday and Sunday. When Native elders fished during the week, they were arrested (see footnote 6 below).

-- Bias was also charged by Rep. Morris Udall who claimed: "Both the State and the Secretary have been reluctant either to provide rural people with a meaningful opportunity to participate in the management and regulation of subsistence resources in their local area or to take timely steps to protect subsistence resources and uses from overpowering competition from the urban population centers. . . " (see footnote 7 below)

References:

Alaska Department of Fish and Game (ADF&G). 2002. Selective harvest the way

Alaskans fish. Available electronically at
<http://www.state.ak.us/adfg/sportf/geninfo/selhar/selhar.htm>.

Alaska Department of Fish and Game (ADF&G). 2001. Season Overview for

Recreational, Subsistence, Personal Use and Educational Fisheries, 2001. Division of Sport Fish, Region II.

Alaska Department of Fish and Game (ADF&G), Division of Subsistence. 1991. Subsistence Management in Alaska: 1991 Update. Juneau, AK.

Alaska Department of Fish and Game (ADF&G), Division of Subsistence. 1990. How Alaska's Subsistence Law Affected Hunting Regulations. Juneau, AK.

Alaska Department of Natural Resources (ADNR), Division of Parks and Outdoor Recreation. 2002. Wood-Tikchik State Park Management Plan. Public review draft.

Arvey, W. D. 1991. Annual Management Report for Sport Fisheries in the Arctic-Yukon-Kuskokwim Region, 1989. Alaska Department of Fish and Game (ADF&G), Fishery Management Report No. 91-3.

Burr, J. 2001. Fishery Management Report for Sport Fisheries in the Arctic-Yukon-Kuskokwim Management Area, 1999-2000. Alaska Department of Fish and Game (ADF&G), Fishery Management Report No. 01-3.

Clark, R. A. 1991. Mortality of Arctic Grayling Captured and Released with Sport Fishing Gear. Alaska Department of Fish and Game (ADF&G), Fishery Data Series No. 91-59.

Clark, J. H., Andersen, F., and Hallberg, J. 1992. Proposals Considered and Changes Made to the Regulatory Structure of the Sport Fishery in the Arctic-Yukon-Kuskokwim Region of Alaska by the Alaska Board of Fisheries at their February 1992 Meeting. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Management Report No. 92-1.

Demientieff, M. 2002. "Statement of Mitch Demientieff, Chair, Federal Subsistence Board before the Senate Committee on Indian Affairs, Oversight Hearing on Subsistence Hunting and Fishing in the State of Alaska."

Fairbanks Chamber of Commerce. 2002. "Resolution 02-0304A: A resolution supporting the development and construction of a hatchery in interior Alaska." Available electronically at <http://www.fairbankschamber.org/res20.html>.

Federal Subsistence Board, U.S. Fish and Wildlife Service, Office of Subsistence Management. 2002a. Subsistence Management Regulations for the Harvest of Fish and Shellfish on Federal Public Lands and Waters in Alaska. Anchorage, AK. Available electronically at <http://www.r7.fws.gov/asm/home.html>.

Federal Subsistence Board, U.S. Fish and Wildlife Service, Office of Subsistence Management. 2002b. Subsistence Management Regulations for the Harvest of Wildlife on Federal Public Lands in Alaska. Anchorage, AK. Available electronically at <http://Alaska.fws.gov/asm/home.html>.

Federal Subsistence Board. 2000. Federal Subsistence Board News Release. Available electronically at <http://www.r7.fws.gov/asm/news00/r071900.html>.

Hamel, C., Herrmann, M., Lee, S. T., and Criddle, K. R. 2000. "An economic

discussion of the marine sport fisheries in lower Cook Inlet." Presented before the tenth meeting of the International Institute for Fisheries Economics and Trade, Corvallis, Oregon, July 10 -- 24, 2000. Available electronically at <http://www.orst.edu/Dept/IIFET/2000/abstracts/hamel.html>.

Herrmann, M., Lee, S. T., Hamel, C., Criddle, K. R., Geier, H. T., Greenberg, J. A., and Lewis, C. E. 2001. Final Report: An Economic Assessment of the Sport Fisheries for Halibut, and Chinook and Coho Salmon in the Lower and Central Cook Inlet. OCS Study MMS 2000-061.

Hicks, M. V. (Editor). 1995. Moose. Alaska Department of Fish and Game (ADF&G), Division of Wildlife Conservation, Federal Aid in Wildlife Restoration Survey-Inventory Management Report 1 July 1991 -- 30 June 1993.

Howe, A. L., Walker, R. J., Olnes, C., Sundet, K., and Bingham, A. E. 2001. Revised Edition: Harvest, Catch, and Participation in Alaska Sport Fisheries During 1997. Alaska Department of Fish and Game (ADF&G), Fishery Data Series No. 98-25 (Revised).

Medred, C. 2002. Catch-Release Isn't the Issue, It's How the Fish Will Be Used. Available electronically at <http://www.and.com/outdoors/v-akcom/story/1296760p_1412687c.html>.

McNair, M. 2002. Alaska Salmon Enhancement Program, 2001 Annual Report. Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries, Juneau, AK. Regional Information Report No. 5J02-04.

Parker, J. F. 2001. Stock Assessment and Biological Characteristics of Burbot in Fielding Lake During 2000. Alaska Department of Fish and Game (ADF&G), Fishery Data Series No. 01-23.

Shively, J. 2002. Alaska Federation of Natives. Personal communication.

State of Alaska, Governor's Office. 2002. "Overview of 2001 southeast Alaska sport fisheries for Chinook and Coho salmon." Available electronically at <http://www.ak.gov/adfg/sportf/region1/geninfo/chin_coho/chin_coho.htm>.

Timmons, L. S. 1991. Opinions and Regulatory Preferences of Holders of Sport Fishing Licenses Resident in the Arctic-Yukon-Kuskokwim Area of Alaska in 1988. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Data Series No. 91-1.

Twitchell, H. 2001. Living cultures, subsistence, and the inhabited wilderness. In: Crossing Boundaries in Park Management: Proceedings of the 11th Conference on Research and Resource Management in Parks and on Public Lands. David Harmon (ed.), Hancock, Michigan: The George Wright Society.

Ulmer, Lieutenant Governor F. (2002). "Comments on Subsistence." Available electronically at <http://www.gov.state.ak.us/ltgov/subsist/subsist.html>.

U.S. Environmental Protection Agency (EPA). 2002. Subsistence management regulations for public lands in Alaska, Subpart D --Seasonal Adjustments --Copper River and Yukon and Kuskokwim River Drainages. 67 Federal Register 120, pp 42185-42187.

U.S. Environmental Protection Agency (EPA). 2002. Subsistence management

regulations for public lands in Alaska, Subpart C and Subpart D --2002 Subsistence Taking of Fish and Shellfish Regulations; Final Rule. Part III Department of Agriculture, Forest Service, 36 Code of Federal Regulations (CFR) Part 242, Department of the Interior, Fish and Wildlife Service Federal Register (FR) 50 CFR Part 100.

U.S. Environmental Protection Agency (EPA). 2001. Subsistence management regulations for public lands in Alaska, Subpart D; Emergency Closures -- Redoubt and Salmon Lakes Drainages. Federal Register (FR) 66, 211: 54934-54936. Available electronically at <http://www.epa.gov/fedrgstr/EPA-IMPACT/2001/October/Day-31/i27342.htm>.

USGS, Alaska Science Center. 2002. Effects of Catch-and-Release Fishing on the Physiology and Hooking Injury of Alagnak River Rainbow Trout, Katmai National Park. Available electronically at <http://159.189.224.13/research/Fisheries/Alagnak/catch_and_release.htm>.

U.S. Fish ad Wildlife Service. 2002. Alaska Subsistence Fisheries Management. Available electronically at <http;//fisheries.fws.gov/FWSMA/asfm.htm>.

U.S. Fish and Wildlife Service. 2000. "Arctic Refuge: North Slope Moose." Available electronically at <http://www.r7.fws.gov/nwr/arctic/wtmoose.html>.

Wolfe, R. J. 2000. Subsistence in Alaska: A Year 2000 Update. Alaska Department of Fish and Game (ADF&G), Division of Subsistence, Juneau, AK.

Footnotes:

1 -- Information on catch and release is prominently displayed on ADF&G's website <http://www.state.ak.us/sportf/geninfo/selhar/selhar/htm>.
2 -- Studies on fish injury and mortality in Alaska resulting from catch-and-release fishing includes those reported by USGS (2002) and Clark (1991).
3 --Twitchell (2001) comments on this cultural conflict as follows:

"Native people are taught to respect all resources and that one never wastes, misuses, plays with, or disrupts subsistence resources, especially fish and wildlife. Their ethics teaches them that when fish and animals are mistreated, the natural order becomes disrupted and people risk future food shortages.

To play with fish by catch-and release sport fishing is disrespectful and violates traditional values. It is believed that disrupting fish in this manner cause the fish to move away and perhaps never return. Native cultures are also very upset by the injury and mortality caused by sport fishermen playing with the fish. Studies have shown, and native people have witnessed, high rates of mortality as a result of poor catch-and-release techniques and handling practices. Improperly sized fishing tackle, barbed hooks, playing fish to exhaustion, mishandling of caught fish, improper hook removal, and poor release practices produce high rates of injury and mortality in fish."

Others that have expressed or reported views on catch-and-release include Burr (2001), Medred (2002), and Timmons (1991). Proposals to eliminate catch-and-release fisheries have been advanced at various times (see e.g., Proposal

00098037

Arctic Char and Dolly Varden: Table 3.19-1 does not mention Arctic char as a fish species that occurs along the TAPS ROW. Section 3.19.1.1.1 mentions Arctic char as an important target species for anglers, but does not mention where they occur. Table 3.19-2 lists Arctic char as occurring in the Sag River drainage. In order for these tables to be consistent, perhaps there should be a footnote added to one or both of the tables. Refer to the footnote in the TAPS Environmental Report (TAPS Owners 2001) Table 3.2-4 which states: "Fish of the genus Salvelinus caught in North Slope drainages and along the Beaufort Sea coast before the mid-1980s were identified as the western Arctic Bering Sea form of the Arctic Char (S. alpinus). Morrow (1980, 1984) contended that these fish are northern forms of Dolly Varden (S. malma), and current consensus conforms to this taxonomic designation. Thus, no Arctic char are listed along TAPS."

00098038

"Security program" paragraph at the bottom of column one could be of more value by adding the words in the third line following the word include: "badges, alarms, sensors"

It should also be noted that the same security measures are implemented at Pump

00098039

The word "Office" should be changed to "Officer."

00098040

NPDES permits do not regulate septic system discharges. Add ". . . and other regulatory requirements." To the end of the last sentence in the paragraph.

00098041

General Comment on Section: Something is amiss in the outline structure. Suggest that nutrients and hydrocarbons be covered under Marine Water Chemistry, or perhaps as a SUBSET of discharges from the VMT.

00098042

General Comment on Section: Something is amiss in the outline structure. Suggest that nutrients and hydrocarbons be covered under Marine Water Chemistry, or perhaps as a SUBSET of discharges from the VMT.

00098043

Check units on oxygen content. mL/L is rare and requires an understanding of temperature and pressure. This is probably meant to be mg/L. The values seem appropriate for the gravimetric units.

00098044

Icons are reversed in the legend. Average annual flow are the long columns. Permit reissuance dates are the red points in time. (Value of 21 mgd is meaningless for the date).

00098045

Permit process is not accurate as described. USEPA issues the NPDES permit. ADEC does not have that authority, but will typically concur through its certification that the permit issuance will uphold State of Alaska Water Quality Standards, per Section 401 of the Clean Water Act. The BWT NPDES permit covers both the sanitary discharge (up to 10,000 gpd) and the treated ballast water discharge (significantly more water, including discharge from VMT Industrial waste sewer system.)

Note in the last line in this paragraph that the 700,000 gallons +/- identified here was domestic sanitary wastewater only (<2,000gpd). BWT discharged considerably

00098046

The permit allows for discharge of UNcovered secondary containment structures, not REcovered ones.

00098047

Insert: ". . . sanitary WASTEwater treatment. . . "

00098048

Please note that although the City of Fairbanks lies generally along the pipeline corridor, the City's wells are located some distance from the pipeline. These wells are not likely to be influenced in any way by the pipeline in terms of quantity or quality of water available. Aquifers serving the pipeline wells are independent hydraulically from the City of Fairbanks wells.

The reference to the City of Fairbanks is intended to be a comparison of water withdrawals with pipeline water use. There is another similar reference in the groundwater section of the Cumulative Impacts analysis.

00098049

The first sentence is incorrect because 1) the Valdez Marine Terminal is not considered a pump station [rather it is a marine terminal] and 2) the Valdez Marine Terminal is regulated by an air quality operating permit (contrary to the statement made in the sentence).

VMT does have an existing air quality operating permit under old air quality rules and did apply for a Title V operating permit.

Suggested Wording: Each of the TAPS pump stations, except Pump Station 5, and the Valdez Marine Terminal are regulated individually with an operating permit from. . .

00098050

Under the Rating/Capacity/Throughput column: All the less than or equal to symbols need to be changed to greater than or equal to -- to be correct. Otherwise, as stated, the table will need to include all the small equipment sources (and tanks) at each facility which does not appear to be the intent of the table.

Under the Number of Units column(s): The following sources need to be include on the table: At PS 2: include one 980 bhp Detroit Diesel electric generator (backup power) At PS 6: include two 619 bhp Detroit Diesel electric generators (1-primary, 1-backup). At PS 10 include two additional 475 bhp Detroit Diesel electric generators (1- primary, 1- backup). Note: These units were listed in the former 18 AAC 50.400 air permits because they were added after 1997. Since the units are permitted based upon engine shaft output you can simply place them in the same line titled "Detroit diesel electric generator". However, the 425 KW value will need to be reduced to 354 KW to be equivalent with the 475 bhp generators at PS 10.

00098051

Footnote "g" does not read correctly. The station has two 210K bbl. tanks. As written the footnote implies there is only a total of 210 K bbls. of tank capacity. Recommend changing the footnote value from 210 K bbls to 420 K bbls.

00098052

Near the last part of the sentence it states PS 7 and PS 8 are "minor sources" in the area. The term "minor source" is an air quality term with regulatory implications that could be construed to mean the facility is not a "major" source of emissions as defined by Title I and Title V of the Clean Air Act. This is not true for PS 7 and PS 8 since they are major sources under Title I and Title V of the CAA.

For clarification -- suggest replacing the word "sources" with "contributors." Therefore the sentence would read "Criteria pollutant and . . . Fairbanks, are minor contributors in the area. . . "

00098053

The statement in the first sentence stating: "facilities are not allowed to exceed the potential maximum emission levels specified in the ADEC operating permits under all operating conditions" is entirely correct. For the most part, the allowable emission values in the permits are not limits but rather emissions estimates ADEC placed in the permits for information purposes. Only in those instances where the specific permit level stated in the permit also includes a statement that the emission level is enforceable or where there were amendments to the permit that tie the emission levels to a technology or ambient limit is the emission level an enforceable potential maximum. However, as a practical matter these emission levels (estimates) are a maximum because they are an estimate of the maximum emissions the equipment

00098054

The 50 ppm value given for the fuel gas H2S concentration in 2001 is incorrect. The average H2S content of the fuel gas for 2001 was 22 ppm; this value is based upon the weekly sampling results of the fuel gas provided by the fuel gas supplier.

00098055

There appears to be a global inconsistency in the sections 4.4.4.6, 4.4.4.6.2, and 4.4.4.7 on the use of the term "Hazardous Air Pollutants" (HAPs). The term HAPs refers to the hazardous air pollutants listed by Section 112 of the Clean Air Act (CAA). The initial list identified 189 compounds as being HAPS.

The sections noted above are including compounds (cyclohexane, n-octane, and hydrogen sulfide) that are not listed on the Section 112 HAP list and, therefore, by definition are not HAPs. These compounds are hazardous and maybe listed elsewhere in regulation such as under EPCRA or the RMP Program. As such, either these compounds should be removed or the HAP entries changed to provide clarification that not all the compounds listed are HAPs.

00098056

The statement in the text that there will be significant out-migration of the non-Native population between 2004 and 2019 appears inconsistent with results presented in Table 4.3-7 on the same page that shows a net in-migration over this period. Perhaps some signs are missing on numbers in the tables, but the results are inconsistent as

00098057

Tables 4.3-7 and 4.3-8 are the first instances in which a format is presented to display economic projections associated with either the proposed action or no-action alternative. For the most part tables, rather than graphs, are used to convey numerical information and, moreover, the tables include only four selected years (2003/04, 2019, and 2034). This makes it difficult to observe/appreciate trends and the arbitrary years chosen obscure important economic consequences depicted in the Environmental Report prepared by the TAPS Owners. There is no justification for only presenting these particular years and describing all the results in terms of the annual rates of change over two arbitrary intervals. We recommend that year-by-year graphs be used to the greatest extent feasible, supplemented by tables when necessary to display particular numbers.

In this case of the economic effects of the proposed alternative the economy is projected to slowly transition away from its current heavy dependence on oil while at the same time dealing with its state revenue shortfall. This basic fact of life, and challenge for the economy of the state, is totally lost in the arbitrary method of presentation of results in this section. The point is that this process of transition will be long and difficult. If you don't describe it, you give the impression that the state's economy will just continue to grow slowly without any particular challenges.

00098058

Petroleum fuel supplies have not historically been cheaper in Alaska than elsewhere and this has not been the stimulus to growth of the tourist industry in the state. It has grown with overall demand and an increase in infrastructure to be able to serve the

00098059

This comment applies to the Table and Text in Section 4.3.19.3.3.

State employment is projected to increase from 21,845 in 2004 to 27,601 in 2034 (see Table 4.3-9). Yet, from revenue estimates given in Table 4.3-12 and population estimates given in 4.3-7, total State revenues are projected to decrease from $4.995 billion ($7,329 per person) to $4.278 billion ($3,891 per person). Increasing employment with falling revenues appears inconsistent -- probably a consequence of the assumption that the state can continue to run deficits. Table 4.3-14 indicates that, despite this drop in revenues, state expenditures continue to increase, from $5.8 billion in 2004 to $7.3 billion in 2034. This error would be corrected if the analysis assumed that state expenditures were reduced to equal state revenues.

00098060

It is illogical to project that unemployment will trend upward over a 30-year period without suggesting some mechanism, in the form of structural change in the economy, to account for the trend. Under normal circumstances the unemployment rate is cyclical and any long-term trend would be moderated by in- or out-migration of

00098061

Investment earnings are projected to fall over time, but the analysis assumes (inappropriately) that the Permanent Fund, the main financial asset of the state, will continue to grow.

Total state revenues are projected to fall over time. This is inconsistent with the projected increase in state and local government employment shown in Table 4.3-9. State government employment cannot increase without more revenues to pay salaries. Local government is highly dependent on state transfers to pay local employee salaries. If the state budget is falling, some must come out of local transfers and this will negatively impact local government employment.

The largest state to local transfer, which is not recognized anywhere in the text, is the school foundation program which is state supported for K-12 schools. This provides all the money for schools in many rural areas and half or more of the money in urban Alaska.

This oversight results in an error in assuming that local government will not be negatively impacted if the state budget is cut. Because of its dependence, local government would indeed suffer.

00098062

Total state expenditures (Table 4.3-14) are higher than state revenues, reported in an earlier table (Table 4.3-12, page 4.3-74), in all years presented. The state cannot constitutionally operate without balancing its budget.

This error is repeated in the analysis of the no-action alternative -- compare expenditures estimates in Table 4.6-19 (page 4.6-66) with projected state revenues shown in Table 4.6-17 (page 4.6-64).

00098063

Local government expenditures are consistently reported here to be much greater than revenues reported in Table 4.3-13 (page 4.3-75). It is possible that personnel expenditures are erroneously added to education and noneducation expenditures to get the total. Actually personnel expenditures are included in the other two categories. As written, these tables indicate that annual deficits will accumulate at the local government level.

This same error is repeated for the no-action alternative as indicated in Table 4.6-20 (page 4.6-66) and Table 4.6-18 (page 4.6-65).

00098064

Employment is projected to be less than 150 jobs higher (2019) and only 11 jobs higher (2034) in the case of higher production. But higher production over a 30-year period will certainly provide a legacy of more economic activity in the state both from direct employment and from higher public revenues. This result does not make sense.

00098065

The estimates presented in Table 4.3-17 are surprising. Although revenues from the oil industry are substantially greater in the 5% probability case than the 95% probability case, the state population, personal income per capita, and Permanent Fund Dividends are identical for these two cases. Moreover, the differences in total employment between these two cases are very small.

00098066

The discussion of spill prevention and response makes no mention of the federal Oil Pollution Act of 1990, which legislated new requirements for tankers operating in Prince William Sound.

00098067

It appears that some of the map symbols for "Oil Spill Contingency Plan Sites" did not reproduce correctly in the pdf file. There could be a font or symbol problem.

00098068

The first sentence in the paragraph states: "A 10% increase in the world price of crude oil would increase oil revenues by 6.2% over the baseline proposed action case." The DEIS should define what is meant by "revenue" (e.g., to whom does it accrue and how is it calculated) and explain why crude price increases lead to less than proportional revenue increases.

Because changes in oil price at the market flow directly back to the wellhead, a 10% change in the market price should have a greater percentage impact on the wellhead price.

00098069

This is backwards. A higher oil price, sustained over 30 years, will result in a higher, not a lower, rate of population increase because the higher oil price will be a stimulus to a higher level of economic activity.

00098070

This is backwards. A lower oil price, sustained over 30 years, will result in a lower, not a higher, rate of population increase because the lower oil price will be a drag on the level of economic activity.

00098071

The overall level of economic activity in the region in fact will be closely correlated with TAPS throughput via operations employment, local property taxes on the pipeline, and the sharing of revenues from the state to local government (including transfers in support of K-12 schools). In addition, state government provides services directly at the local level that would be jeopardized by a reduction in oil revenues. Finally, as oil revenues dry up the squeeze on the state budget is likely to hit areas that lack statewide or urban support, such as special services targeting rural parts of the state.

00098072

The estimates presented in Table 4.3-18 are contra-intuitive. Although revenues from the oil industry are greater in the event that prices are 10% higher, the total employment projected for the year 2019 is lower in the event of higher oil prices -- a surprising result. Also, the personal income per capita is slightly lower ($24,281 compared to $24,288) in the event of higher oil prices, another apparent inconsistency.

According to this table the economy is very insensitive to differences in the price of oil sustained over a 30-year period. This does not make sense.

Perhaps it can be traced to two assumptions the authors may have made. First that differences in the price of oil do not result in differences in the level of investment in oil production. Second is that differences in oil revenues do not result in differences in state and local expenditures. Neither of these assumptions is reasonable.

00098073

Native corporations are impacted by oil activity in at least two important ways -- employment contracts in support of the pipeline, employment contracts in support of NS oil exploration, development, and production. Natives also share as owners, either through the corporations, or local government, in oil production from NS fields.

00098074

Pressure on subsistence resources is probably more sensitive to population than to the level of personal income.

00098075

The document does not present consistent views on the availability of cash to support subsistence activities. In the proposed action alternative, Page 4.3-82, paragraph 5 line 15 states that:

"A decline in income growth might affect the productivity of subsistence activities and create other socioeconomic impacts. Less income would be available for investment in subsistence-related equipment, and the demand for subsistence products would increase as the amount of income available for the purchase of consumer market goods would fall."

In the cumulative effects section, the exact opposite is stated on page 4.7-108, paragraph 2 left, line 1:

"Larger amounts of cash would probably be available to individuals pursuing subsistence activities, enabling them to purchase improved subsistence-related technologies (though the precise impact of cash or subsistence activity has not been measured."

The evaluation of the direct and cumulative impacts to subsistence activities needs to be re-examined for consistency.

This paragraph explicitly states that income will be decreasing over the renewal period. Table 4.3-21 on page 4.3-83 shows income in the total pipeline corridor increasing slightly after 2004 for the total pipeline corridor and for all areas except the North Slope Borough. The inconsistencies between these data need to be reconciled.

00098076

This comment applies to the last sentence of the text box on Page 4.3-84.

The text in the sidebar should be rewritten for clarity and the subsistence section of the cumulative effects chapter should be reviewed for consistency.

The summary of impacts on page 4.3-84 (sidebar, line 20) suggests that positive economic conditions that provide cash for modern technology used in subsistence are not necessarily associated with TAPS. This statement is contradictory to what is stated in the proposed action section on subsistence. In the proposed action chapter, page 4.3.82, paragraph 4, line 18 notes that "Less income would be available for investment in subsistence-related equipment, and the demand for subsistence products would increase as the amount of income available for the purchase of consumer goods would fall." This contradiction needs to be reviewed.

Additionally, the proposed action and cumulative effects section do not agree. As stated above, the proposed action indicates that there will be less income available for investment into subsistence-related equipment. In the cumulative effects chapter the exact opposite is noted; more income available to pursue subsistence activities. Bullet point 1 on page 4.7-108 of the cumulative effects chapter notes that "Larger amounts of cash would probably be available to individuals pursuing subsistence activities, enabling them to purchase improved subsistence-related technologies (though the precise impact of cash or subsistence activity has not been measured)."

00098077

DEIS contains statement that Chugach Corporation is concerned that the existence of the TAPS on their land precludes other uses --attributed to Rogers (2002). What are the other uses?

This paragraph also claims that trespassing has occurred on Ahtna Corporation lands presumably facilitated by the presence of TAPS access roads near a heavily used snowmachine and ORV use area. If trespassing does occur, this seems to be a matter for security and/or police forces, rather than an issue relevant to renewal of the

00098078

This paragraph indicates that recreational opportunities and use levels would be expected to decline . . . as a result of decreased state funding . . . . We agree with this assessment. However, this paragraph refers to Section 4.3.19, which (Table 4.3-14) actually projects state expenditures to increase (not decrease) over this time period -- an inconsistency that needs to be explained.

00098079

Recommend adding the following to the summary on economics:

The relative importance of the oil and gas sector is expected to diminish year-by-year as production levels decline, and an oil-based economy transitions to a more diversified economy. The state will have to find means to deal with growing deficits that will slow the economy for some time to come. These means include some combination of spending reductions, imposition of new taxes or increases in present taxes, sale of assets, and revisions to the Permanent Fund.

Recommend that the summary sentence on sociocultural systems be rewritten as follows:

Anticipated effects on sociocultural systems include a continuation of the changes presently occurring -- a mixture of benefits and liabilities. The presence of TAPS is only one of the many forces causing social change among Alaska natives and non-natives.

The summary on recreation, wilderness, and aesthetics needs to be rewritten. To our knowledge, "acceptable levels" have not been defined.

00098080

There appears to be a global inconsistency in the sections 4.4.4.6, 4.4.4.6.2, and 4.4.4.7 on the use of the term "Hazardous Air Pollutants" (HAPs). The term HAPs refers to the hazardous air pollutants listed by Section 112 of the Clean Air Act (CAA). The initial list identified 189 compounds as being HAPS.

The sections noted above are including compounds (cyclohexane, n-octane, and hydrogen sulfide) that are not listed on the Section 112 HAP list and, therefore, by definition are not HAPs. These compounds are hazardous and maybe listed elsewhere in regulation such as under EPCRA or the RMP Program. As such, either these compounds should be removed or the HAP entries changed to provide clarification that not all the compounds listed are HAPs.

00098081

There appears to be a global inconsistency in the sections 4.4.4.6, 4.4.4.6.2, and 4.4.4.7 on the use of the term "Hazardous Air Pollutants" (HAPs). The term HAPs refers to the hazardous air pollutants listed by Section 112 of the Clean Air Act (CAA). The initial list identified 189 compounds as being HAPS.

The sections noted above are including compounds (cyclohexane, n-octane, and hydrogen sulfide) that are not listed on the Section 112 HAP list and, therefore, by definition are not HAPs. These compounds are hazardous and maybe listed elsewhere in regulation such as under EPCRA or the RMP Program. As such, either these compounds should be removed or the HAP entries changed to provide clarification that not all the compounds listed are HAPs.

00098082

There appears to be a global inconsistency in the sections 4.4.4.6, 4.4.4.6.2, and 4.4.4.7 on the use of the term "Hazardous Air Pollutants" (HAPs). The term HAPs refers to the hazardous air pollutants listed by Section 112 of the Clean Air Act (CAA). The initial list identified 189 compounds as being HAPS.

The sections noted above are including compounds (cyclohexane, n-octane, and hydrogen sulfide) that are not listed on the Section 112 HAP list and, therefore, by definition are not HAPs. These compounds are hazardous and maybe listed elsewhere in regulation such as under EPCRA or the RMP Program. As such, either these compounds should be removed or the HAP entries changed to provide clarification that not all the compounds listed are HAPs.

00098083

The temperature of the surrounding permafrost will also be a significant factor in permafrost aggradation following dismantlement. Permafrost aggradation will be much greater on the northern part of the pipeline. On portions of the southern end of the pipeline the permafrost may not aggrade at all following pipeline removal.

00098084

Insert ", if necessary," before "reseeding" because natural revegetation (without reseeding) is generally preferred

00098085

All these activities would take place on the workpad or pads for related facilities and the impacts would be localized to the pad.

Soil compaction is unlikely or negligible. Therefore, delete "soil compaction."

Permafrost would degrade where heat pipes or mechanical refrigeration systems are removed, but the DRR activities would otherwise have little to no effect on the

00098086

Regarding the last sentence, there would not likely be much if any impact to slope stability or permafrost as these excavations would be on previously disturbed ground under the workpad and would already be thawed.

00098087

Delete "and expand"

There is little reason for mass wasting to expand because the areas disturbed by construction have generally stabilized and thawing of permafrost has slowed with the lowering of the permafrost table.

00098088

First Mile post should be 735, not 35.

This is a poor example of evidence of the impact due to recent climate warming. The area was swampy to begin with and then was disturbed by pipeline construction. It is not reasonable to associate the problems at MP 735 with climate change.

00098089

It is not accurate to say "where it is on the outwash fan of the Delta River". Needs to be changed to "where it is on glacial till".

00098090

It is expected that future surface disturbances leading to thawing of permafrost will be significantly less than the past disturbances because most of the future disturbances will be within the workpad area that has been cleared for over 25 years and the development of thaw bulbs slows with increasing depth.

00098091

This is a poor example of the thawing of permafrost since construction because the thawing at this location is due to the disturbance from the buried pipeline and the spill cleanup (1979) and not to climate change.

00098092

Change "would" to "may" because there is no certainty that climate warming would be at a rate that would increase mass wasting.

00098093

Replace "would" with "may" and after "TAPS" insert "if trends continue for the next 30 years".

00098094

Add " 1998 " to read "1997, 1998, and 2001".

00098095

Line 6: Insert "primarily" after "caused" and remove "the degradation of permafrost due to warming climate change and" and insert "made by fires and mining prior to the construction of TAPS" after "disturbance".

Line 10: Add period after "2000b)" and insert "The"

Line 12: After "2000b)" insert "have had some ground warming and permafrost degradation primarily as a result of the ground disturbance caused by construction and maintenance activities along this section of TAPS that is underlain by very warm and discontinuous permafrost."

00098096

Line 10: Remove "has" and replace with "may have contributed to". Delete "accelerated". After "2000b)" insert "although the changes in creep rates are more likely to be related to vegetation removal and grading during construction and the ongoing maintenance activities on the slopes"

Line 14: Remove "Degradation of permafrost has also been evidenced by accelerated soil creep movement" and replace with "Some minor warming of permafrost may have caused some creep rate changes"

Line 17: Remove "and" and begin new sentence.

Line 19: After "MP 438)" insert "may be evidence of near-surface permafrost degradation."

This paragraph uses examples of soil creep on slopes along TAPS as evidence of recent regional warming. This is an incorrect characterization since soil creep on slopes is not usually the result of permafrost degradation. The process of soil creep, called soliflucation, chiefly occurs from active layer thawing of near-surface soils that occurs on a seasonal (and sometimes daily) basis.

00098097

Riprap may be obtained from more than four sites and new rip rap sites may be permitted. Therefore, suggest deleting the words "four" and "currently" from the sentence.

00098098

To say that the slope has deteriorated is misleading and suggests that the slope is progressing toward failure, which is not the case.

Suggest saying: "In those instances where vertical support members on slopes have moved significantly, replacement or other types of repair may be necessary."

00098099

The siltation and erosion mentioned here was temporary. The sites are stabilized after mining episodes to prevent siltation and erosion.

00098100

A thaw bulb does not generally cause subsidence of the buried pipeline since it is only buried in thaw-stable permafrost. The photos referenced were taken of above ground pipe, not buried pipe.

00098101

Spelling: Tiekel , not Tickel

00098102

The pipeline crosses the Gulkana River, not the West Fork of the Gulkana River.

00098103

"Spruce-fir" forests in the interior are mentioned. There are no fir in interior Alaska. Recommend they be identified as "spruce-birch" or "spruce forests."

00098104

The statement about temporary avoidance to 0.6 mi. applies only to caribou during the calving period, and is not appropriate for this block dealing with all birds and mammals. In addition, the avoidance of oil field infrastructure by caribou is equivocal, with some animals occurring very close to roads and pipes during the calving period.

00098105

It is stated that Prince William Sound was "pristine" prior to the Exxon Valdez oil spill. A recent paper (cited below) shows this was not the case, because there was extensive hunting, trapping, fishing, logging, and fox farming and oil spillage after the 1964 earthquake. In addition, natural oil seeps are a major source of crude oil pollution to Prince William Sound. This misperception should be removed from the DEIS.

Wooley, C. 2002. The myth of the "Pristine Environment": Past human impacts in Prince William Sound and the Northern Gulf of Alaska. Spill Science and Technology

00098106

The color coding for Coastal Forest and Boreal Forest appear the same and the forest types can't be differentiated.

00098107

The figure legend says wetlands in the vicinity of TAPS, but the map only shows the northernmost part of TAPS.

00098108

The Cronin (2002) citation is not in the lit cited. It is in Volume 3 of the DEIS, however. A better, published reference for this citation on pages 3.21-15 and 3.21-16 paragraph 2 is Cronin et al. (1998a). A better reference for the citation on page 3.21-16 paragraph 1 is Bergerud et al. (1984). These are already in the literature

00098109

The Cronin (2002) citation is not in the lit cited. It is in Volume 3 of the DEIS, however. A better, published reference for this citation on pages 3.21-15 and 3.21-16 paragraph 2 is Cronin et al. (1998a). A better reference for the citation on page 3.21-16 paragraph 1 is Bergerud et al. (1984). These are already in the literature

00098110

The Cronin (2002) citation is not in the lit cited. It is in Volume 3 of the DEIS, however. A better, published reference for this citation on pages 3.21-15 and 3.21-16 paragraph 2 is Cronin et al. (1998a). A better reference for the citation on page 3.21-16 paragraph 1 is Bergerud et al. (1984). These are already in the literature

00098111

The reference Cronin et al. (1998) should be (1998b).

00098112

The Garshelis and Johnson reference is now published. It's 2001, volume 38: pages 19-35.

00098113

The statement about caribou avoidance up to 0.6 mi. should use the original reference (Cameron et al. 1992) which is in the lit cited in Vol 3 of the DEIS.

00098114

Treatment of this subject in the DEIS has considered only selected literature. It would be appropriate to consider the following relevant publications:

Wiens, J.A., R. H. Day, S.M. Murphy, and K. R. Parker. 2001. Drawing conclusions nine years after the Exxon Valdez oil spill: a commentary on Irons et al. (2000). Condor 103: 886-892.

Wiens, J.A., T.O. Crist, R. H. Day, S. M. Murphy, and G.D. Hayward. 1996. Effects of the Exxon Valdez oil spill on marine bird communities in Prince William Sound, Alaska. Ecological Applications 6: 828-841.

Wiens, J.A., T.O. Crist, R.H. Day, S. M. Murphy, and G.D. Hayward. 2001. A canonical correspondence analysis of the effects of the Exxon Valdez oil spill on marine birds. Ecological Applications 11: 828-839.

Also, there is a new list of recovery status from the Exxon Valdez Trustees that should be used to update the information in the DEIS:

Exxon Valdez oil spill restoration plan Draft update on injured resources and services. August 6, 2002. Exxon Valdez oil spill Trustee Council, Anchorage, Alaska.

00098115

Treatment of this subject in the DEIS has considered only selected literature. It would be appropriate to consider the following relevant publications:

Wiens, J.A., R. H. Day, S.M. Murphy, and K. R. Parker. 2001. Drawing conclusions nine years after the Exxon Valdez oil spill: a commentary on Irons et al. (2000). Condor 103: 886-892.

Wiens, J.A., T.O. Crist, R. H. Day, S. M. Murphy, and G.D. Hayward. 1996. Effects of the Exxon Valdez oil spill on marine bird communities in Prince William Sound, Alaska. Ecological Applications 6: 828-841.

Wiens, J.A., T.O. Crist, R.H. Day, S. M. Murphy, and G.D. Hayward. 2001. A canonical correspondence analysis of the effects of the Exxon Valdez oil spill on marine birds. Ecological Applications 11: 828-839.

Also, there is a new list of recovery status from the Exxon Valdez Trustees that should be used to update the information in the DEIS:

Exxon Valdez oil spill restoration plan Draft update on injured resources and services. August 6, 2002. Exxon Valdez oil spill Trustee Council, Anchorage, Alaska.

00098116

There is a new reference that should be cited to support the exchange of caribou among herds in Arctic Alaska:

Cronin, M.A., J.C. Patton, N. Balmysheva, and M.D. MacNeil In Press. Genetic variation in caribou and reindeer (Rangifer tarandus). Animal Genetics.

This paper shows that the Arctic caribou herds constitute a single interbreeding population.

00098117

The words "The number of" should be deleted to make the sentence read properly.

00098118

The DEIS should note that the decline in the north slope moose population has been followed by recovery. See Carol, G. 2002. The rise, fall, and recovery of the Colville River moose population. Moose Call, Vol.14. (See Argonne Document #3371)

00098119

The statement on caribou herds' overlap would read better as follows: These herds have distinct calving areas, but SOMETIMES overlap during other times of the year (Cronin et al. 1998a).

00098120

In Paragraph 6 & 7, it is worth noting that a NMFS biologist recommends delisting the Bering Sea stock of bowheads in:

Shelden, K.E.W., D. P. DeMaster, D. J. Rugh, and A.M. Olson. 2001. Developing classification criteria under the U.S. Endangered Species Act: Bowhead whales as a case study. Conservation Biology 15:1300-1307. (See Argonne Document #3373)

00098121

The TAPS ROW and facilities are EAST of the areas in western Alaska that are described here. Change "west" to "east".

00098122

Note that the sea otter is now considered recovering by the Exxon Valdez Trustee Council and new information is in a report on status of resources:

Exxon Valdez oil spill restoration plan Draft update on injured resources and services. April 10 2002. Exxon Valdez oil spill Trustee Council, Anchorage, Alaska. (See Argonne Document #3332)

00098123

Several communities note that the Exxon Valdez oil spill reduced subsistence activity. However, it should be noted that Reports by the Subsistence Health Task Force following the Exxon Valdez oil spill generally found that subsistence foods were safe to eat. See Report 279, Food Safety Testing 1993, from the Exxon Valdez oil spill Trustee Council (available from the Trustees (907) 278-8012, or

00098124

Several communities note that the Exxon Valdez oil spill reduced subsistence activity. However, it should be noted that Reports by the Subsistence Health Task Force following the Exxon Valdez oil spill generally found that subsistence foods were safe to eat. See Report 279, Food Safety Testing 1993, from the Exxon Valdez oil spill Trustee Council (available from the Trustees (907) 278-8012, or

00098125

The text states there are about 7500 wolves in Alaska and the table indicates that 1609 were harvested in a year.

Note that In the "Biology of Wolves" from the ADFG website, it says "...in 1994-95 approximately 7,500 to 10,000 wolves...were believed to be in the state." The estimate in the text is thus the low end of the range. For harvest, ADFG says "In the past decade the annual harvest of wolves ranged from 669-1,580 and averaged 1,081, or about 11-16 percent of the estimated population." So the table shows the top of the harvest range. The DEIS should state the ranges of these parameters to give the reader a better view of wolf numbers and harvests. (See Argonne Document #3372)

00098126

The text states there are about 7500 wolves in Alaska and the table indicates that 1609 were harvested in a year.

Note that In the "Biology of Wolves" from the ADFG website, it says "...in 1994-95 approximately 7,500 to 10,000 wolves...were believed to be in the state." The estimate in the text is thus the low end of the range. For harvest, ADFG says "In the past decade the annual harvest of wolves ranged from 669-1,580 and averaged 1,081, or about 11-16 percent of the estimated population." So the table shows the top of the harvest range. The DEIS should state the ranges of these parameters to give the reader a better view of wolf numbers and harvests. (See Argonne Document #3372)

00098127

The Tanana River Milepost should read 531-532.

00098128

Please clarify which response time this table is illustrating (best, average, worst).

00098129

The spill events detailed in the paragraph might be better presented as a table rather than a collection of sites and numbers that become a little unwieldy in a single paragraph. A table in this section that lists all of the scenarios would be useful (as it would save looking up tables in sections included much earlier).

00098130

Table 4.4-9 deals with Maximum Public Exposure to Soot etc. not predicted volumes of oil as stated here. You probably need to refer to Table 4.4.-19.

00098131

Include a reference to Table 4.4-20 after "throughput of 0.3 million bbl/d."

00098132

Table 4.4-22 gives a MP range of 736-800 with the location for maximum oil release at MP 741, BWT. The text says MP720-800.

00098133

Paragraphs 2 and 3: the information presented in these two paragraphs would be much more accessible if presented as a summary table.

00098134

Delete or reword: "The generally direction of the movement depended on the wind direction."

00098135

Define HAP -- Hazardous Air Pollutants.

00098136

The definitions of the meteorological conditions referenced should be expanded (D Class, F Class etc.).

00098137

The Prince William Sound Tanker Oil Discharge Prevention and Contingency Plan was amended in September 2001 and January 2002. These revisions affect the number and type of escort vessels discussed in the following paragraphs. Suggested changes to the DEIS text are provided in subsequent comments.

00098138

Replace the last sentence with the following:

"SERVS uses 10 vessels equipped for tanker escort and docking and for spill

00098139

Paragraphs 2 and 3: The vessel configuration at SERVS has changed. Currently, SERVS has 10 vessels equipped for tanker escort and docking and for spill response. (These are no longer referred to as "ERVs" since all but one of the original ERVs have been replaced; rather they are termed "escort vessels.") The 10 vessels are as follows:

-- 2 Enhanced Tractor Tugs (ETTs) (identified in paragraph 3)
-- 3 Prevention and Response Tugs (PRTs)
-- 1 Utility Vessel (formerly ERV)
-- 4 Tugs

The four response barges staged in the Sound are not vessels and are thus not included in the 10 vessels listed above. The last sentence in paragraph 2 should thus be made a separate bullet.

Paragraph 4: The "ocean-going tug" at Hinchinbrook is one of the 10 escort vessels listed above.

Paragraph 6: The last sentence should be deleted because it confuses the vessel count.

00098140

Well written summary of biological resources.

00098141

General comments on the Affected Environment -- Birds section:

1. Why are scientific names not presented at first mention of common names in the Bird section? In some cases use of scientific names would be useful to the reader (e.g., p 3.20-2 paragraph 3 line 10 where Brant are described as "another type of goose"; p 3.20-6 paragraph 2 line 1 in reference to the recently renamed long-tailed duck [formerly oldsquaw]).
2. In the Raptor section (3.20.1.2) perhaps there should be some specific references to the ZRAs (Zones of Restricted Activity), many of which are in place to protect sensitive raptor nesting habitats.

00098142

Edit ". . .migrations that can range. . ." to ". . .migrations can range. . ."

00098143

A more appropriate citation is the ADF&G hunting regulations or the enabling state legislation for the DHCMA, not the TAPS Owners document.

00098144

Regarding Table 3.21-2, the harvest numbers for all species in the table should be better described. Do the numbers include firearm (i.e., gun) and archery harvest (where applicable by GMU and species)? Resident and non-resident harvest (where applicable by GMU and species)? Subsistence harvest (where applicable by GMU and species)? Also, the years should be included in the table title.

00098145

Why is the herd definition statement a footnote? It is important enough to be included as part of the text.

00098146

A citation is required for the 7 seasonal phases.

00098147

Change ". . .that forces the caribou. . ." to ". . . that force the caribou. . ."

00098148

Regarding Table 3.21-3, not all herds were censused in 2000. It would be more appropriate and informative to provide in parentheses the census year beside the estimate. In addition, we assume that all herd estimates were generated with standard survey or census methods. If this assumption is not correct (e.g., herd size estimated from harvest data), this information needs to be elaborated upon. And finally, information regarding harvest data is not complete; do the numbers include firearm (i.e., gun) and bow harvest, resident and non-resident harvest, subsistence

00098149

Change "phenloic" to "epoxy"

00098150

Delete " also need corrosion control" add " need repair"

00098151

The TAPS Owners have applied for renewal of an array of rights, ranging from the mainline right-of-way to oil spill contingency plan sites. See TAPS Owners' Applications, Line Lists at Vol. 2, Tabs D through H. Those rights are properly identified in portions of the DEIS, see, e.g., p. 2.1, but are too narrowly described elsewhere in the document, see, e.g., pp. ES-1 to ES-2, 1-2 to 1-7, and 1-7 to 1-8. Given the criticality of the description of the rights to be renewed to the analysis being undertaken and the decision that the BLM is making, the DEIS should be modified to accurately and comprehensively describe the rights under analysis that will be

00098152

The information in this paragraph would be much easier to follow if presented as a

00098153

The data in this paragraph do not appear to be included on the tables that summarize the other spill scenarios.

00098154

Add at the end of this paragraph, "The use of native seed specifically grown for revegetation projects would reduce the incidence of exotic species."

00098155

Spell out: AO and SPC . It would help the reader to define each one when they are first used in a new section.

00098156

Although spill response activities could reduce productivity, you should note that they are also likely to reduce mortality of adults. Spill response activities would be likely to disturb animals and move them away from the spill location.

00098157

Define all abbreviations at first use-- ESA-Endangered Species Act, SC-Species of Concern etc.

00098158

Note that cetaceans might avoid a spill area themselves, or they may be disturbed by the response activities and so leave the area.

00098159

The sidebar notes that few visitors go to areas where the pipeline is located. In fact, pipeline visitor centers are some of the most popular visitor sites in Alaska. Visitation numbers are available from BLM.

00098160

Define ACEC here as it is the first use of the abbreviation in this section.

00098161

Section 4.4.4.3 does not mention the number of rivers and streams crossed by TAPS.

00098162

"fathering center" should be "gathering center."

00098163

Define "CSU"

00098164

The Northstar oil field is currently producing. References to the "proposed Northstar project" should read: "Northstar Project" (i.e., delete "proposed")

00098165

Footnote a: The DEIS reference to Table 4.7.5-1 -- does not appear to exist perhaps it should be Table 4.7-1 or 4.7-2.

00098166

Define: AQRV

00098167

Define NORM -- Naturally Occurring Radioactive Material

00098168

Define: TSDFs. While there is an appendix that defines all abbreviations, it would be helpful to the reader to define each abbreviation at the point of first use in each major section.

00098169

Define BWTF: Ballast Wastewater Treatment Facility

00098170

Define units: 50 uR/h = micro rads per hour

00098171

Define: FTE

00098172

Change "anathropogenic" to "anthropogenic."

00098173

Acres is misspelled. "10,900 acres"

00098174

Suggest insert: after (MMS 1998). "There have been no significant offshore oil spills on the North Slope to date, and subsequently no mortality of seabirds and waterfowl."

00098175

Diesel spills are primarily confined to gravel pads and so have had a negligible biological impact. Also, provide documentation for the reference to "hundreds of

00098176

The DEIS states: " . . . only several hundred caribou, at most, might die from oiling. . ."

It is hard to imagine any North Slope spill scenario that would result in "hundreds" of caribou dying as a result of oiling. Caribou would be hazed from spill sites, and would probably avoid spill response areas due to the level of activity. Oiling would only be likely to occur during the period of time between a spill happening and a response team being mobilized to the location. It would be more accurate to say: "some

00098177

Paragraph beginning: "For listed species. . ."

This paragraph should specifically state that the "past and present activities" that result in a moderate rating are not associated with past or present TAPS/oil field

00098178

The table should clearly state that the use of a moderate or large rating under baseline for Spectacled eider, Steller's eider and bowhead whale are for reasons not associated with current or past oil field activities -- the declines are due to impacts in areas outside of the North Slope.

00098179

The table should clearly state that the species given a minor, moderate or large rating are so rated due to non-oil related activities i.e. past whaling activities or fisheries impacts.

00098180

It should be stated that most behavioral changes noted in cetaceans are very subtle -- and many can only be deduced following statistical analysis. Just because behavioral changes sometimes occur also does not necessarily translate to any biological impact -- either individually or population-wide.

00098181

General Comment for Entire Section: Benchmarking is an important tool for assessment of pipelines and other assets. Benchmarking data can be used to place the scale of health, safety, or environmental impacts into a meaningful quantitative perspective. This section of the DEIS should be expanded to include information relative to the spill performance of TAPS compared to other domestic pipelines and marine transportation systems.

The DEIS does not compare and contrast the relative performance of the TAPS system. TAPS has been shown to have a better record than the average of all other US pipelines on a barrels spilled per billion barrel-mile basis (TAPS Owners, 2001). Because much of the risk based analysis is based upon the historical spill performance of the pipeline, it is appropriate to discuss that performance and put it into context by comparing TAPS to other US pipelines. If this useful information does not warrant a full section, then it should be included as a sidebar.

Reference: TAPS Owners. (2001). Draft Environmental Report for Trans-Alaska Pipeline System Right-of-Way Renewal. Available electronically at <www.tapsrow.com>.

00098182

Several issues need to be addressed in the passage and figure describing the top ten pipeline crude oil spills:

"The descriptions and locations of the top 10 spills, with spill volumes greater than 10,000 gal of crude oil, that have occurred along the pipeline from 1977 through November 2001 are shown in Figure 4.4-1." -- Page 4.4-9, Para. 3, Line 17-22.

The excerpt suggests that all of these spills occurred along the pipeline. However, Figure 4.4-1 lists one spill at the VMT.

The text leads one to believe that the spill information presented in Figure 4.4-1 was taken from the TAPS Owners reference cited earlier in the passage (Column 1, Para 3, line 6). If this is the case, then Fig 4.4-1 is incomplete. The oil spill database used in the TAPS Environmental Report lists two more crude oil spills in excess of 10,000 gal. Both of these spills are listed as occurring at the East Impound Basin at the VMT. One occurred on August 25, 1983, and released 12,600 gal of crude oil and the other occurred on July 25, 1984, and released 24,570 gal of crude oil.

If the source for Fig 4.4-1 is ADEC, 2001b as cited in the figure, it should be noted in the text.

A final suggested edit follows: "The descriptions and locations of the top 10 spills listed in the ADEC spill database, with spill volumes greater than 10,000 gal of crude oil, that have occurred along the pipeline and at the VMT from 1977 through November 2001 are shown in Figure 4.4-1." --Page 4.4-9, second column, Para. 1, Line 9-14.

00098183

Based on the Exxon Valdez experience, the largest economic impact of an oil spill would be employment and income generation in the cleanup effort. Offsetting this could be a reduction in fishing, recreation, tourism, etc., activity.

00098184

It makes no sense to consider the revenue loss from an oil spill assuming throughput of 2 million barrels per day if there is no likelihood that throughput will rise above 1 million barrels per day in the next 30 years.

00098185

There is little point in this analysis if in fact lost revenues from temporarily shutting down the pipeline would be eventually recovered by faster production sometime later. As is suggested in footnote "a" of Table 4.4-38. Note "c" to accompany Table 4.4-38 is missing. The captions to this table should be revised for clarity.

00098186

Significant recreation occurs around Valdez and Wrangell St. Elias National Park. There is also recreation in Prince William Sound.

00098187

Box Entitled: Impacts of Oil Spills on Property Values and Overall Economic Activity: If there is little alternative use for land, then the loss in value from a spill would be negligible rather than "hard to establish."

00098188

The use of the term "likely" is inappropriate here. A loss in oil revenues would CERTAINLY increase state budget deficits absent the imposition of budget balancing measures not addressed in the DEIS.

00098189

Box Entitled: Impacts of No-Action Alternative on Population, Gross State Product, Employment, and Income: This summary characterization of the economic impact of the no-action alternative is completely inadequate. Native population growth is independent of the pipeline. The impacts on employment and income are indeed smaller than the impact on GSP but they are not "small." Their drops in the later half of the decade reflect a protracted period of severe depression for the Alaska economy. To completely ignore this by saying that over the entire 30-year period the rate of growth is positive is ludicrous. The depression would result in a population loss from out-migration, a crash in the value of all fixed assets, such as real estate. State general fund revenues would virtually disappear overnight, pushing state government in a crisis. Local government would follow shortly thereafter because so much financial support for local government comes from the state.

00098190

There is no mention here of what would happen to the instate refineries in the absence of a supply of oil from the North Slope.

00098191

This same comment applies to the proposed action alternative, but it is of much greater significance in terms of the no-action alternative. The DEIS correctly notes that "the absence of almost all state oil revenues would mean that significant additional sources of funds would be needed . . . to cover slowly increasing General Fund expenditures." However, the DEIS analysis simply assumes that these additional funds will be available and from such a source that little or no adverse impacts (other than on GSP) would result. This stretches credulity. In the year 2000, state expenditures were reported (see Table 3.23-9) as approximately $5.2 billion ($8,358 per capita), of which the oil and gas industry provided (see Table 3.23-7) approximately $2.4 billion ($3,823 per capita) of this total. The state faces a $1 billion annual deficit even if oil and gas revenues continue. What is the likely impact if these revenues were to disappear?

The analysis of the no-action alternative assumes that state expenditures can increase to $6.4 billion by 2034 (Table 4.6-19) even though revenues from the oil and gas industry are virtually zero because TAPS and the ANS fields are shut down beginning in 2004.

Any of the options discussed to date (reduced expenditures, increased taxes, and sale of assets) to balance the state budget would entail economic consequences not considered in the analysis of the no-action alternative. As a result, the adverse economic impacts -- carefully depicted in the Environmental Report prepared by the TAPS Owners -- presented in the DEIS are significantly misrepresented! This is a fundamental flaw in the analysis; effects of this assumption are reflected throughout the economic and other sections.

Any of the options discussed to date (reduced expenditures, increases taxes, and sale of assets) to balance the state budget would entail economic consequences not considered in the analysis of the no-action alternative. As a result, the adverse economic impacts -- carefully depicted in the Environmental Report prepared by the TAPS Owners -- presented in the DEIS are significantly misrepresented! This is a fundamental flaw in the analysis; effects of this assumption are reflected throughout

00098192

General Comment for Entire Section: The results of this analysis stand in sharp contrast to those depicted in the TAPS Owners Environmental Report. This analysis provides no indication of the sharp and deep recession (see Fig. 4.4-14 of the Environmental Report) forecast in the Environmental Report, nor of the enduring differences in total personal income, disposable income, or employment impacts. We believe that your erroneous assumption that the State will find a way to balance the budget at current spending levels regardless of the actual economic losses incurred by removing the oil industry from Alaska is the cause of the inaccurate and misleading

00098193

Comparing Tables 4.6-13 and 4.3-8, it is difficult to believe that there would be such small differences in the GSP projections for state government between the proposed action and no-action alternatives. This result is probably an artifact of the unrealistic assumption that the state is able to sustain deficits or to find other sources of funding for state programs.

00098194

The GSP numbers for the individual industries do not add to the total. In particular, in 2004 the GSP falls by nearly 9 billion. However the only sector showing a loss is oil and gas, which falls about 2 billion. If the pipeline closes, one would expect to see some drop in transportation GSP. If the refineries shut down, that should be reflected in manufacturing.

Table 4.3-8 (p. 4.3-70) has the same difficulty -- sums across industries (excluding tourism) do not equal the Alaska total.

00098195

The use of the term "moderate" to describe the loss of personal income in the event of nonrenewal of the pipeline is perhaps consistent with the numerical estimates shown in Table 4.6-16, but does not reflect what is actually likely to happen. Based upon Goldsmith's analysis of this alternative using the same MAP model the actual reduction in personal income or disposable personal income per capita (depicted in Figs. 4.4-7 and 4.4-8 of TAPS Owners, 2001) the differences between the proposed action and no-action alternatives are substantial and enduring.

The loss would be considerable as would the wealth of Alaska households (primarily real estate). Although the average growth over the 30-year period might indeed be positive, if there is a depression during the 30-year period, it is unconscionable to ignore it.

00098196

This table shows an increase in state (12.9%) and local (19.9%) government employment during the 30-year projection period. In fact a shortfall of revenues starting at about $2 billion in 2004 and growing over time would almost certainly precipitate a dramatic decline in state and local government employment. This would in turn have a negative multiplier effect on the economy, lengthening and deepening the economic depression that would accompany the no-action alternative.

00098197

This analysis concludes that the Permanent Fund Dividend per capita would be 12.2% higher in 2034 under the no-action alternative ($965, see Table 4.6-16) compared to the proposed action alternative ($860, see Table 4.3-11) -- a result that strains credulity. Presumably the reason for this finding is that the Permanent Fund distribution is divided among fewer people in the case of the no-action alternative.

00098198

The DEIS asserts that "The loss of oil production and the end of pipeline operations would only have a moderate impact on the ability of local governments to maintain existing service levels. This conclusion is reached because the analysis assumed that state transfers to local governments would not be affected by the loss of state oil revenues with the nonrenewal of TAPS."

As noted in other comments, the assumption that state budgets will not be severely impacted by the loss in petroleum revenues if the no-action alternative is selected appears unreasonable. It may well be beyond the scope of the EIS (noted on page 4.6-63 bottom paragraph 2) to forecast just exactly what options will be selected by the state to address the significant revenue shortfall that would result if the no-action alternative were selected. But it is also unreasonable to assume that the resulting fiscal crisis can be addressed without significant impacts (e.g., budget cutbacks, liquidating assets, drawing down reserves, etc.).

The consequences of this inaccurate and ultimately misleading assumption are reflected throughout the economic analysis of the no-action alternative in terms of state (Table 4.6-19) and local government (Table 4.6-20) expenditures, Permanent Fund Dividend (Table 4.6-23), and at many other places in the analysis.

00098199

This paragraph states that State revenues would fall about 25% from the loss of oil revenues. This implies the state could, albeit with some difficulty, absorb the loss. In fact this loss represents the elimination of all but about 20 percent of the general fund budget -- from which unrestricted spending originates. A quarter of the budget is nondiscretionay federal grants, a quarter is the earnings of the Permanent Fund that according to the DEIS analysis continues to be directed to the dividend. The rest is agency receipts for activities such as the operation of the airport. In sum the loss means the state cannot continue to fund basic programs without severe dislocations within the economy.

00098200

Box Entitled: Impacts of No-Action Alternative on Tax Revenues: The direct revenue loss to local government would be from the petroleum property tax. However, the economic depression would devastate property values and this would reduce general local property tax receipts. The loss of state revenues and resulting budget cuts would mean a loss in local government transfers, including support for K-12 education. Finally, the loss in state revenues would lead to the elimination of programs that benefit rural parts of the state, particularly in the area of health and social services.

00098201

This illustrates why summarizing the economic impacts by reporting only the average rate of change over the 30-year period misses what is important. Although state revenues fall by more than $1 billion overnight, the text reports only that "overall tax revenues in the state would decrease at an annual average rate of 1.5% over the 30-year period." This gives the Alaskan reader a false sense of the future without North Slope oil production and should be changed. An accurate illustration of state revenues is warranted.

00098202

As indicated in an earlier comment, the loss of economic activity at the local level would be severe due to the loss of employment in pipeline and oil production activities, the loss of public revenues -- state and local.

00098203

The economic depression that would accompany the closure of the pipeline and shutdown of North Slope oil production could result in a migration from rural to urban Alaska. No one can say for sure, but if it were to happen it would merely represent an amplification of a trend that has been occurring in Alaska for some time.

00098204

This is another example of how summarizing the economic impacts by reporting only the average rate of change over the 30-year period misses what is important. This statement completely ignores the income loss and economic depression. As shown in Figure 4.4-8 of the TAPS Environmental Report (TAPS Owners, 2001), disposable personal income is projected to decrease sharply from 2004 to 2008 and then slowly recover but not reach 2004 levels until well past 2015.

Reference

TAPS Owners. 2001. Draft Environmental Report for Trans Alaska Pipeline System Right-of-Way Renewal. Anchorage, AK.

00098205

This is another example of how summarizing the economic impacts by reporting only the average rate of change over the 30-year period misses what is important. This statement completely ignores the jobs loss and economic depression. If the annual data were graphed, there would be an obvious trend that could not be ignored.

00098206

This is another example of how summarizing the economic impacts by reporting only the average rate of change over the 30-year period misses what is important. This statement completely ignores changes in unemployment, population changes, income loss, and economic depression. As shown in Figure 4.4-10 of the TAPS Environmental Report (TAPS Owners, 2001), the overall state population is projected to be approximately 16% lower in 2015 than if the proposed action is chosen. As another example, unemployment peaks at 11% in 2006/07 as compared to 8% in those same years if the proposed action is chosen.

00098207

The discussion on subsistence begins with the statement that "lost oil production and oil revenues in 2004 and beyond would affect subsistence through the slight decline in per capita Permanent Fund Dividend support to personal incomes in the Alaska Native community." Presumably, this statement refers to a temporal trend shown in Table 4.6-16 for the no-action alternative, rather than a comparison between the impacts of the proposed and no-action alternatives. Because of what we believe is an error in the economic analysis, the PFD per capita in 2034 is actually greater in the no-action alternative than in the preferred action alternative.

00098208

The statements in this paragraph that road conditions would decline on the Dalton Highway because the state would neglect to maintain it and secondly that the financial resources of Alaska residents would decline in the event of the no-action alternative are not unreasonable. They are, however, not fully supported by the results of the economic analysis. According to figures presented in the DEIS state expenditures in the year 2034 are lower in the case of the no-action alternative compared to the proposed action alternative ($6.4 billion compared to $7.3 billion), but so too is the population, with the result that the expenditures per capita are essentially identical ($6,606 per capita) in 2034 whichever option is selected. Personal income per capita in 2034 under the no-action alternative ($23,851 in Table 4.6-16) is only marginally lower than that ($24,980 in Table 4.3-11) in the case of the preferred action alternative.

The fault, in our view, does not lie with the subsistence comment on page 4.6.-71, but rather with the results of the economic analysis.

00098209

The actual economic impacts of the no-action alternative compared to the proposed action alternative -- as opposed to those depicted in the DEIS -- almost certainly entail significant economic hardships including recession, loss of incomes (including a probable loss or at least significant reduction of the PFD), and significant reduction in state and local (particularly the North Slope Borough and Valdez) spending. And loss of the PFD would probably exacerbate social problems -- a point that should be made in this section.

In order to do this yet maintain consistency with the results of the economic analysis will require that the economic analysis be modified -- at least to the extent that some

00098210

The summary description of the economic impacts of the no-action alternative is incorrect for two reasons:

First, it significantly understates the adverse economic impacts that would result from selection of the no-action alternative.

Second, the summary as written is inconsistent with the more detailed findings. For example, the summary claims that there would be "initial declines in gross state product" followed by slow growth through 2034. This statement fails to adequately summarize the chart shown in Fig. 4.6-1 (see also Table 4.6-13). In fact, there is a precipitous (38%) drop in GSP in 2004 and despite "slow growth" the GSP does not recover to its 2003 pre-TAPS shutdown level by the end of the analysis period in 2034. Personal income per capita (see Table 4.6-16) likewise does not recover to pre-shutdown levels by 2034.

The summary of the economic impact on the state of the no-action alternative is totally inadequate. To characterize it as an 'initial decline to be "followed by slow growth" completely misses the critical point that it will result in a severe and protracted economic depression for the state.

00098211

General Comment for Entire Section: Overall, this section is well written and reaches generally sound conclusions despite the errors in the economic analysis on which some of it is based. In discussing adverse impacts on minority and low-income populations it should be noted that budget pressures in the state and in some other localities (e.g., the North Slope Borough) as a result of the decline in petroleum revenues might well impact funds for education. Largely because of relatively small school sizes (economies of scale) education is very costly in Alaska on a per pupil basis. We cannot forecast exactly how program budgets would be cut in response to sharply reduced revenues, but it is unlikely that any program would be untouched. State budget cuts affecting public schools would affect all students, including low income and minority students. However, available data from the US Department of Education, National Center for Educational Statistics, National Household Education Survey, 1993 indicate that children of parents with greater income or education are more likely to select private schools or to have their choice of residence determined by school quality. For example, on a national basis approximately 17.1% of students with family incomes less than $15,000 annually went to chosen schools (3.2% to private schools) for grades 3 to 12, compared to 24.1% (15.6% in private schools) of those with family incomes greater than $50,000 annually in 1993.

Thus, cuts in public education funds are likely to have a greater effect on minority and low-income populations.

00098212

In addition to the transfer programs from state to local government mentioned, the state funds most of education in rural Alaska, provides some services directly, and also funds some programs, particularly in health and human services that target rural communities. These would all be in jeopardy with the abrupt loss of oil revenues.

00098213

Reference to out-migration and potentially beneficial effects on subsistence needs to be checked against data presented in Table 4.6-12 showing that there is apparently a net in-migration (perhaps the error is in this table). The statement that subsistence will improve because of "the emergence of an economy that is not necessarily as conducive to sport hunting and fishing as the present economy" is more conjecture than fact. It is also possible that attempts to increase tourism in a depressed economy could result in increased hunting and fishing pressure from out-of-state

00098214

". . .infant mortality among Alaska Natives decreased from approximately 36% between 1988-1990 and 1996-1998 . . . ." The Alaska Native infant mortality rate was not 36% in the 1988 to 1990 interval. The infant mortality rate (measured as the number of infant deaths per 1,000 live births) did decrease 36% from 10.5 in 1988-1990 to 6.7 in 1996-1998. The sentence should be corrected by deleting the word 'from' in line 23.

Paragraph 2 left, line 27: A figure of 'nearly 70%' is quoted here. On page 26 of the NSB 1998/99 Economic Profile and Census Report the actual percent of adults living in the North Slope Borough who have earned a high school diploma, GED, or attended some form of higher education is given almost 76% for 1998. Suggest updating the 70% figure to 76%.

Paragraph 1 right, line 16: Based upon the graph on page 5-5 of the Mental Health chapter of the Healthy Alaskans 2010 document available at the Alaska Department of Health and Human Services website (<http://health.hss.state.ak.us/dph/deu/ha2010/volume_1.htm>) the suicide rate fell to 39 in 1997, not 41 as given in the DEIS.

The statistics presented in the sociocultural section are interesting and useful in describing the improvements in health care and general well being of Alaska Natives. However, the DEIS does not drive home the point that some social changes are beneficial and that 'going back to the old ways' is not always a superior choice. Time trends for data show that Alaska Natives are much better off today than in the past with regard to the following statistics. For example, in 1940, infant mortality rates (measured as infant deaths per 1,000 live births) among Alaska Natives were as high as 120 and now as low as 6.7. Neonatal deaths rates (measured as deaths per 1,000 live births) averaged approximately 70 in 1950 and decreased to less than 5 by the mid-1990s. The life expectancy for an Alaska Native has increased from approximately 46 years of age in 1950 to over 65 years of age today (ECA, 2000). The DEIS may be improved with the inclusion of these statistics.

Reference

Everest Consulting Associates (ECA). 2000. Memo to Anne Brown, "Alaska Native Infant Mortality / Life Expectancy." December 7, 2000.

00098215

The following paragraph characterizes the cumulative sociocultural effects associated with the no-action alternative: "Not renewing the Federal Grant would remove a source of wage employment for rural Alaskans, which as noted can have positive as well as negative consequences. It would also remove a considerable amount of state and local (North Slope Borough) tax revenues used to fund public services, programs, and infrastructure. . ."

This description is incomplete and offers little perspective on the merits of the alternatives under consideration. It is certainly true that oil and gas developments have had both beneficial and adverse effects on sociocultural systems. However, it is difficult to imagine that the substantial adverse economic consequences (e.g., depression, loss of employment, loss of government services) that accompany the choice of the no-action alternative could be offset by commensurate social benefits. Choice of the no-action alternative is unlikely to reverse social change or to permit a return to the way things were. Rather it is likely to leave Alaskan society with the same social problems and fewer resources with which to cope with these problems. The "wage employment" effect noted in the above quotation not only includes those directly employed by the oil and gas industry and its contractors, but also jobs (e.g., teachers, nurses) supported by tax revenues from this industry.

00098216

It does not make sense to suggest that an oil spill would increase tax revenues at the state level.

00098217

This paragraph discusses the anticipated cumulative effects associated with the no-action alternative. Although the introductory paragraph on economics on page 4.7-115 indicates that a discussion of the no-action alternative is included in this section, only this one paragraph is included. (The no-action alternative is also mentioned in Table 4.7-13 on pages 4.7-129 and following.) This deficiency should be remedied. Understanding the cumulative economic effects of the no-action alternative is important. Some of the most significant points that should be considered are listed in Table 4.5-17 of the TAPS Environmental Report (TAPS Owners, 2001).

00098218

The statement that: "The gas pipeline and its related infrastructure would substantially add to the currently existing visual impacts along and within the TAPS ROW" is not supported by the facts. The gas pipeline will be buried and the only facilities visible along the ROW will be compressor stations -- analogous to pump stations for TAPS. Use of the word "substantial" seems unjustified. The DEIS should provide some idea of the number, nature, and areal extent of the gas pipeline facilities (available from other EISs) to justify such a judgment.

00098219

As noted in another comment, we believe that it is unreasonable to believe that the gas pipeline could go ahead in the event that the no-action alternative was selected. Thus, we believe that the sentence fragment: "However, the gas pipeline would still likely be built. . ." is incorrect. Additionally, the use of the word "likely" can be questioned. According to the most recent studies, a gas pipeline is not economically feasible at present. Although such a project may be "reasonably foreseeable" for purposes of a cumulative effects analysis, it is not necessarily "likely."

00098220

Strongly disagree with the following sentence: "Analyses indicate that high and adverse impacts would not be anticipated for cumulative actions combined with the proposed action, less-than-30-year renewal alternative, or the no-action alternative."

Specifically, in discussing the effects of the no-action alternative, the DEIS correctly states (page 4.6-83): "This DEIS anticipates impacts under the no-action alternative that may be considered high and adverse, specifically those associated with economic effects at the state and local levels of discontinuing the TAPS."

What is it about the cumulative case that would change the environmental justice impacts of the no-action alternative? The only two potentially significant projects included in the cumulative case are the NMDS in Ft. Greely and the gas pipeline. It is acknowledged in the economics section (page 4.7-116) that the NMDS would create "a total of 360 direct operations jobs and additional 110 indirect jobs. . . Currently 600 civilian and military jobs are under threat as part of the plan to close the base at Ft. Greely." Thus, the NMDS project would not even compensate for anticipated job losses. We believe that it is absolutely unreasonable to assume that the gas pipeline would go forth if the no-action alternative were selected. But, even if it did, the economic benefits of the gas pipeline are very much smaller than those associated with TAPS. The gas pipeline would not provide enough revenues to the state to balance the budget or to maintain Permanent Fund Dividends at their present levels.

It is inconsistent to claim that the no-action alternative would have environmental justice impacts that "may be considered high and adverse," yet elsewhere in the same document to claim that the cumulative environmental justice effects would not also be high and adverse.

00098221

The summary of the anticipated cumulative economic effects of the no-action alternative is incomplete and flawed. The "summary" is limited to brief mention of the possibility that a gas transmission system might partially offset economic losses associated with the no-action alternative. There is no mention of the economic consequences of the no-action alternative.

Moreover, it is very difficult to imagine circumstances under which either the federal or state government would decide not to renew the TAPS right-of-way, yet allow natural gas development to take place. Engineers should comment on the technical feasibility of producing solely gas from fields closed because the ROW is not renewed. From a business perspective, the risks and returns of gas development assuming that the government chose not to renew the TAPS ROW are not likely to be commensurate. In the Environmental Report prepared by the TAPS Owners (2001), it is assumed that selection of the no-action alternative would foreclose ANS gas commercialization.

Thus, instead of stating that a gas project might somehow compensate for the loss of the ANS oil fields, the description of the no-action alternative should note that the choice of the no-action alternative has the added negative impact of stranding major gas deposits.

Even assuming, for argument's sake, that gas development would take place in the event that the ROW was not renewed, the claim that gas development "might partially offset" the negative impacts associated with nonrenewal should be backed up with calculations and estimates of the degree of "offset" that would occur. According to data presented in the Spring 2002 Revenue Sources Book, published by the Alaska Department of Revenue, oil revenues to the state totaled nearly $2.3 billion in fiscal year (FY) 2001. This same source estimates that a 4.5 bcf gas line would generate $400 million in new state revenue if gas prices were $3 per million Btu in Chicago. The report goes on to state, however, that "many gas price forecasters do not expect prices to hold much above $3 per million Btu on a consistent basis over the next decade" and noted that a recent study concluded that "the [gas] project is not economic based on their cost estimates and market projects." In practical terms, a gas commercialization project -- even if it commenced with certainty in the short-term -- would not "offset" a loss in oil revenues to any great extent.

Reference

TAPS Owners. (2001). Draft Environmental Report for Trans-Alaska Pipeline System Right-of-Way Renewal. Available electronically at <www.tapsrow.com>.

00098222

The summary of the cumulative sociocultural impacts of the three alternatives under consideration is incomplete and confusing. The table entries for the "less-than-30-year renewal alternative" and the "no-action" alternative are identical and read "same impacts as under the proposed action." Do the authors mean that the effects are qualitatively similar or that these effects are identical? Would a rational decision-maker concerned only with social effects be absolutely indifferent to the

00098223

The text states there were originally 2 breaches in the Endicott Causeway. This is true, but it would be appropriate to note that there are now 3 breaches in the

00098224

This comment refers to all the Maps for Figure 4.7-6.

The exploration well drilled in the ANWR by the Kaktovik Inupiat Corporation and partners is not indicated on the maps.

00098225

It is stated that the human health impacts of spills are not insignificant and of the same order as those from ingestion of smoked meats and fish. This needs to be referenced. Reports by the Subsistence Health Task Force following the Exxon Valdez oil spill generally found that subsistence foods were safe to eat. See Report 279, Food Safety Testing 1993, from the Exxon Valdez oil spill Trustee Council (available from the Trustees (907) 278-8012, or www.oilspill.state.ak.us).

00098226

It is stated that the human health impacts of spills are not insignificant and of the same order as those from ingestion of smoked meats and fish. This needs to be referenced. Reports by the Subsistence Health Task Force following the Exxon Valdez oil spill generally found that subsistence foods were safe to eat. See Report 279, Food Safety Testing 1993, from the Exxon Valdez oil spill Trustee Council (available from the Trustees (907) 278-8012, or www.oilspill.state.ak.us).

00098227

There are several changes to references and wording that will make this section more accurate.

1. Line 9. Replace Pollard et al (1996a) with Murphy and Lawhead (2000) which is already in the citations.
2. Lines 14-18. Reword as follows: SOME will avoid roads "following partuRition" (CAMERON ET AL. 1992, Cronin et al. 1994). These citations are already listed.
3. Lines 18-21. Reword as follows: Caribou, including cows with calves, do not avoid developments during the post-calving period (Pollard et al. 1996b, Cronin et al. 1998a). These citations are already listed.

00098228

It is stated that ADF&G enforces fishery regulations. Note that the Alaska Dept. of Public Safety (State Fish and Wildlife Protection) also enforce fish and game

00098229

The statement about the numbers of caribou in the Central Arctic Herd should be updated. The 2000 census showed about 27,000 animals. References for the censuses in the 1990's-2000 are:

Cronin, M.A., H.A. Whitlaw, and W.B. Ballard. 2001. Addendum. Northern Alaska oil fields and caribou. Wildlife Society Bulletin 29:764.

Cronin, M.A., H.A. Whitlaw, and W.B. Ballard. 2000. Northern Alaska oil fields and caribou. Wildlife Society Bulletin. 28:919-922.

00098230

The statement about loss of scores of bear and deer from a tanker spill should be rewritten to reflect documented moralities to these species from the Exxon Valdez spill. Cite references.

00098231

This comment also applies to Tables 4.7-9, 4.7-10 and 4.7-11.

The approach to identify cumulative impacts is interesting and has merit. The presentation of an existing baseline is particularly useful for putting the proposed action and other future actions in perspective. A potential oversight, however, is that a baseline ranking definition for species listed under the MMPA (see point 5 below) was not provided. The following points are relevant to the baseline rankings in Tables 4.7-9, 4.7-10, and 4.7-11.

1. The definition of the baseline rankings (footnote "b" in the tables) could imply that the past impacts of TAPS and other actions is the cause of the baseline status of the species. It should be explicitly noted in the text and table footnotes when the cause of the baseline status of the different species is not known, and that there is no evidence that TAPS resulted in the baseline condition of these species. The different definitions for baseline rankings (i.e., ESA or State Species of Special Concern category) should also be in footnote "b".

2. Footnote "a" defines the ranking terms in relation to predicted effect of an action (as described in the text on page 4.7-102), but does not differentiate these ranking definitions from the baseline definitions (i.e. for listed species). You should clearly differentiate the definitions for baseline and action cumulative effects in the text and tables.

3. For the Table 4.7-9 entry for Pacific Walrus in the Beaufort Sea, it is not clear why a "minor" baseline and cumulative effect is noted. The species appears healthy in the Bering Sea, and rarely occurs in the central Alaskan Beaufort Sea. It is not listed as depleted, threatened or endangered.

4. It is not clear why the sea otter in Prince William Sound is listed as having a "moderate" baseline and cumulative effect in Table 4.7-11, because is not listed as depleted, threatened, or endangered in Prince William Sound.

5. The Beluga whale in Prince William Sound has a baseline ranking of "moderate" in Table 4.7-11, but is mis-classified. First, footnote "e" for Table 4.7-11 references the Beaufort-Chukchi stocks, but probably should refer to the Cook Inlet Stock, which can occur in Prince William Sound. Second, there is no ranking category for the MMPA depleted category status in paragraph 4 on page 4.7-102. The Cook Inlet beluga stock is listed as depleted under the MMPA (due to over harvest) but not listed under the ESA. Add a definition for MMPA depleted status in paragraph 4 on page 4.7-102.

00098232

This would be more clear if stated: "The size of the power units range are 400 and 800 KW and the number of generator sets varies at the stations depending on the required power. The installed power ranges is from 1.3MW at PS-12 to 4.7MW at

00098233

The batteries ARE the power supply and NOT the backup. The small propane fired generators are essentially trickle charges that keep the batteries charged. It should read: "Each RGV is powered by batteries. . . . The batteries provide the source of power for the RGVs. Propane-fired generators and where available, commercial power serve as battery chargers."

00098234

Not all pigs are smart pigs. Suggested change: "Pigs are cylindrical objects inserted into the pipeline periodically that are propelled by the moving oil or gas and used for cleaning. Sometimes the pigs are instrumented (hence their name smart pigs) to detect corrosion, deformation, wall-thinning, or curvature changes in the pipe."

00098235

SERVS escort tankers to approximately 17 miles outside of Hinchinbrook Entrance, not sure if this is international waters. Suggest using this fact to better describe the escort pattern.

00098236

The last sentence is incomplete and should end with ". . . from either the Federal [add: or State] On-Scene Coordinator"

00098237

This section identifies a flare stack at the Valdez Marine Terminal. There is no flare stack at the VMT. The terminal has no flares.

00098238

The sentence is incomplete and is left hanging.

00098239

Each of the pump stations 1,3,4,7,9, and 12 are envisioned to also receive new pump modules and electrical switchgear. This should be reflected in the equipment to be added.

00098240

The loading ARMS are the subject of removal (not legs). Also, the same sentence incorrectly indicates removal of the VOC control (only from Berth 3),. . . Berth 3 is one of the berths that does NOT have vapor controls

00098241

The GCI fiber optic cable is not part of TAPS, and is not owned by the TAPS Owners. It occupies its own separate right-of-way.

Add as last sentence: "The FOC in some places is attached directly to the pipe and in other areas it is connected to the VSMs or workpad and pipeline bridges. In these locations the FOC would have to be removed and either buried or supported by other means."

00098242

Pipe friction is not a significant contributor to atomizing crude oil. The most the temperature rise across a limited length of pipe is across a pump station and here the maximum temp rise is only a few degrees F and not likely to cause a problem. Suggested rewrite: ". . . Crude oil movement in pipelines requires pressurized flow. Small leaks would tend to create an aerosol spray along with the liquid crude oil. If an ignition source was present, a flash fire. . . "

00098243

Freon is incorrectly identified as the fire suppression agent. The correct agent is

00098244

The wall thickness of the tanks is greatest at the bottom. Reword the sentence to read: "Wall thickness is 1 ½ at the bottom, decreasing to 1 1/8 at the top."

00098245

The report indicates that the pressure in the pipeline at MP 178 would exceed 1,000 psi that oil would likely flow to the surface and . . . . Our calculations indicate 700 psi at 1 MMBD and up to 850 psi at max throughput during normal operations (upsets may exceed this amount). Suggest rewording to eliminate any specificity and read as follows: "Because the pressure in the pipeline exceeds hundreds of psi, it is likely that the released oil. . . "

00098246

The last sentence of the paragraph states "No federal noncompliance events have been reported (TAPS Owners 2001a)." This statement is made in reference to Alyeska NPDES permits. Some minor noncompliances with the linewide permit have been self-reported by Alyeska.

00098247

The entire section is committed to discussing groundwater, and this paragraph in particular discusses the impact of sanitary wastewater to the groundwater. Remove ". . . and the fact that releases must be within the guidelines of the linewide NPDES permit." The linewide NPDES permit regulates wastewater releases to surface water of the U.S. and does not regulate sanitary discharges to groundwater.

00098248

4th Paragraph -- There is no NPDES permit upper limit to the volume allowed to be discharged for hydrostatic testing therefore modifications to the line-wide NPDES permit would not occur simply because of an increase in the volume of hydrostatic test waters. The last sentence of the 4th paragraph should be removed.

5th Paragraph. -- Remove the 3rd sentence. The NPDES permit will not be amended simply because we are producing wastewater at those locations where new pipeline segments will be buried

00098249

1st bullet -- each site could release 500,000 gallons. In my opinion this estimate is very low. Consider rewording as follows: "Dewatering 15 to 20 corrosion repair sites per year that could release an annual total of approximately 500,000 gallons of water per site to the environment."

00098250

Last sentence of paragraph -- The second half of the last sentence states that there have been no formal NPDES incidents of noncompliance. . . This is not true and should be removed from the sentence. There have been formal incidences of noncompliance regarding excavation dewatering. It is assumed that "noncompliance" means violations of the NPDES permit.

NOTE: Find other NPDES comment and replace language.

00098251

Include the word "domestic" between "treated" and "wastewater". Also, remove the words "to land" because this makes the sentence confusing to anyone who knows NPDES. NPDES by definition refers to discharges to Waters of the US.

00098252

"Surface water regime" affected by sanitary wastewater discharge etc? Correct to read: "Surface water quality".

00098253

"Along the Jim River . . .the above ground pipeline parallels the riverbed . . ."

Note, both buried and elevated crossings exist here.

00098254

(". . . e.g. unanticipated release flows on the Tazlina River in 1997 significantly modified . . .and required rapid response. . . .")

Glacier dammed lake releases were clearly anticipated on the Tazlina River -- the Design Criteria document (Argonne Document reference #133) indicates the years the releases occurred. What is not certain is the timing of any release as it depends on rainfall, snowmelt as well as characteristics of the glacier.

A "rapid" response was not required in the sense that the bank armoring constructed was an emergency action. The remaining river-to-bank buffer was still substantial even after the flood in 1997. However, it was felt that the next large flood -- the 1997 flood was a record event -- could reduce the buffer to a point that was unacceptable for a major bridge structure. So Alyeska constructed the armoring as a prudent measure to minimize future concerns (see Figure 4.1-8 notes).

00098255

"Adding spur dikes. . ..used to protect eroding stream banks"

Spur dikes are also used to protect shallow buried line in the floodplain. The spur dikes reduce velocities and scour which allow shallower pipe burial depth.

00098256

1) "Riprap islands are often placed around the piles".

Islands of riprap at the VSMs are rarely used.

2) Line 17: "A similar method. . .is used to armor access areas to pipeline valves."
The riprap at R6V34, MP 186 protects the entire valve installation, not just the access.

3) Paragraph 3, line 6 from the bottom, "Because an integral component of structural design. . ."

This should read "river training structure design."

00098257

"Erosion and sedimentation were wide spread problems during the initial construction . . .most have been eliminated. . ."

This page addresses overall river processes and the usage of various river training structures to protect the pipeline from these processes. On the other hand, the Draft EIS probably refers to construction induced impacts such as:
- initial bank erosion at an installed buried pipeline crossing until revegetation ore restoration was complete,
- instream sedimentation (both suspended and bedload) caused during the construction of large buried crossings.

Thus the comparison of problems during construction versus what is happening now is not relevant.

00098258

"The major flood that occurred on the Sag River in 1992 produced a peak flow of about 42,900 ft 3/s."

This was the estimated peak flow at the USGS flow monitoring station near Sagwon. Due to very high inflows from the Ivishak River, which enters the Sag River downstream of Sagwon, the flows downstream were much higher and estimated to be about 2 times the Pipeline Design Flood.

00098259

"At small stream crossings, the pipeline has produced local ponding of water."

Should low water crossings be included in this "Flooding" section? The issue with them certainly is not their performance at high flow but usually their impact at low flow.

00098260

"Gravel bags or riprap are stockpiled at a number of locations. . ."

Large gravel bags are on the left bank of the Sag River at MP 47 -- they were placed as an interim measure in 1992 to halt bank erosion. I am not aware of any other large bags on the ROW. Certainly riprap is stockpiled at a number of locations.

00098261

Box Entitled: Aufeis -- "Accumulation of aufeis can affect the hydrologic regimen of river basins. . . "

It is unclear what this means. Aufeis certainly affects spring water levels and floodplain overflow areas, but not the regimen of river basins.

00098262

DEIS states: ". . .innovative technologies such as the Rosgen technique are being used to train the streams. The Rosgen technique allows control of river or stream erosion with minimal construction. . . "

While it is true that the Rosgen stream stabilization technique does not require placement of revetments or dikes, it should be noted that significant in-stream work is required. Reference required for Rosgen technique.

00098263

The DEIS states: "The probability of floods along the TAPS ROW is high and the need for maintenance or additional new works in response to a flood is high"

The probability of a flood on any specific stream along TAPS is the same as for any other location or project. This statement could therefore be misleading. Likely the intended points were:

- TAPS crosses numerous rivers and is located extensively in floodplain areas,
- Thus the probability of a flood occurring at a TAPS crossing is high (for example if you have 100 distinctly separate river systems crossed by a project, a 100 year flood will occur, on the average, only once every 100 years).

The need for new work at crossings has been and is expected to be low. The majority of the new work done in response to major floods since 1992, have been in floodplain or areas where the line is parallel to the river.

00098264

The DEIS States: "Short term impact such as. . .possibly rupturing the pipeline, might produce measurable damage. . . "

The DEIS indicates that if past mitigation measures are followed, the "long term impacts. . . would be expected to be similar to those seen historically".

Since historically, there have been only several very minor* exposures at stream crossings, which certainly posed no integrity concerns, it does not follow that similar impacts and mitigation would result in "possibly rupturing the pipeline. . ."

_____

* In about 1983 about 1000 feet of pipeline was exposed in the P.S.12 area. The construction of an adjacent uphill and parallel power line caused the blockage of a very small stream (in the clearing process) and this diverted all the flow down the ROW.

00098265

The DEIS states: "In northern area, the presence of ice can complicate and modify the movement and spreading of an oil slick". In fact, the presence of ice can complicate a spill response, or it can assist a spill response, depending upon the circumstances of a particular spill.

With respect to the "box" on impacts of Oil Spills: the probability of an aircraft/helicopter crashing into the bridge is very low,
in the case of the Gulkana River bridge, the bridge structure would likely absorb the impact with little structural damage to the line.

00098266

The DEIS states: " . . . and the continued presence of river structures. . ."

It is incorrect to indicate impacts from river training structures would increase with time because:
- the vast majority of the river training structures were constructed upon construction of the pipeline,
- in most cases, especially with guidebanks and revetments, the impact of the structures occurred shortly after their construction and certainly does not increase with time,
- in the case of new structures like revetments, the bank armoring essentially

00098267

Correction, see Table 3.13-3:

PS10 and VMT are largest sources for SO2 (not PS2). PS2 is smallest source for SO2. Should state also that both PS2 and 10 are ramped down.

00098268

Error in emission rates for PS11 to Valdez compared to PS12 to Valdez. PS12 to Valdez should be smaller than PS11 to Valdez.

00098269

Tank vapors at VMT are incinerated, not flared.

Suggested Wording: Sources of HAPS at TAPS facilities include the combustion of the displacement vapors from the Valdez Marine Terminal vapor recovery system in the VMT power boilers as well as the incineration of any excess vapors in the vapor

00098270

Reference (g): Source is HMH 2001, not NMH 2001.

00098271

Include reference of ambient monitoring data source in North Pole (NOx and SO2, Williams Petroleum Refinery).

Suggestion: (2) City of Fairbanks ambient air pollution monitoring program for CO (1996) and Williams North Pole Refinery ambient monitoring program for NOx and SO2 near Pump Station 8.

00098272

"Air quality is also affected by the release of VOC from overpressure vents . . ." There is no evidence that air quality (or standards) is affected since there are no off-site monitoring data.

Suggested Wording: Potential releases of VOCs from overpressure vents may affect the air quality in the vicinity of the pump stations.

00098273

"Air quality impacts by portable fuel combustion units . . . Air quality is also locally impacted from sandblasting for surface corrosion . . .." There are no air quality impacts as long as they are not measurable beyond the TAPS-ROW.

Suggested Wording: Air quality may be impacted in the vicinity of the pump stations from sandblasting for surface corrosion

00098274

It should be noted that CO2 is not a regulated air pollutant for TAPS (See also comment for 4.5.2.9).

Suggestion: Remove reference to CO2 as an air pollutant. May discuss suspected relationship between CO2 and global warming in a qualitative sense and the relatively small contribution of TAPS on a global scale.

00098275

Motor vehicle emissions: It is not clear why and which cumulative effects would cause the health risk factors for benzene in the city of Valdez to increase to levels that would require additional controls for mobile and point sources. If the contribution of the VMT of benzene in the city of Valdez is less than 10%, additional controls of VMT emission sources would not be effective.

Section 3.17.2.4 indicates that only 10% of the impacts in Valdez stem from the VMT. This section (4.7.6.11.2) indicates that future increases in VOC impacts in Valdez trigger more controls at the VMT. These two statements are contradictory and one should be changed.

00098276

This comment applies to Tables 4.4-29 through 4.4-32.

The comparison concentrations should label all values as either 1-hour or 15-minute averages. The 15-minute average values are non-conservative (under-estimating) compared to the 1-hour health impact values.

Suggestion: Use EPA's ambient impact scaling factors or scaling formula for time averaging periods for ambient impacts to either 15 minute or 1-hour averages (Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD) US Environmental Protection Agency, EPA-450/4-87-007, May 1987).

00098277

While the "No-Action Alternative Analysis" describes in notable detail (i) activities that would likely occur if this alternative were selected and (ii) the potential environmental consequences of those activities, see, e.g., DEIS § 4.6, including the description of activities at pp. 4.6-1 to 4.6-2, elsewhere in the document elements of the alternative are described in a manner that suggests that they are so speculative as to prevent reasonable analysis. See, e.g., pp. 4.7-1 ("No action has not received engineering and environmental study and its description remains somewhat speculative.") and 4.2-21 ("No specific approved plans or designs for termination activities currently exist. Such plans and designs would have to be developed before specific action could be taken."); see also pp. ES-2 and 2-5 (citing need for additional NEPA documentation for termination process). It is recommended that: (i) early in the FEIS a more comprehensive description of those activities that would occur if the no-action alternative were selected should be identified and (ii) descriptions of those activities as "speculative" should be deleted. See, e.g., pp. ES-2, 2-5, and 4.7-1.

00098278

The DEIS defines the "AO" as the "Authorized Officer (Joint Pipeline Office)" at pp. xxix. That is not correct for purposes of the decision to renew TAPS -- the AO is BLM's Authorized Officer for TAPS Renewal. The DEIS definition at p. xxix should be changed so that there is no confusion as to the appropriate official making the TAPS renewal decision.

00098279

Add "foundation underlain by" before "permafrost."

00098280

Not clear why different comparison standards are used between the pipeline and the Valdez scenarios. The Valdez scenario comparison concentrations should be made for all appropriate NAAQS averaging periods (1,3,8,24-hour averaging periods). Comparisons are not meaningful since there is no indication what the 8-hour impacts are compared against.

Suggestion: Use EPA's ambient impact scaling factors or scaling formula for time averaging periods for ambient impacts to either 15 minute or 1-hour averages (Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD) US Environmental Protection Agency, EPA-450/4-87-007, May 1987).

00098281

The pipeline does not cross the Hines Creek Fault. This sentence should be corrected to say that the pipeline crosses the McGinnis Glacier Fault (in addition to the Denali Fault which is cited in Line 7).

The correct reference to the three faults crossed by TAPS (Denali, McGinnis Glacier and Donnelly Dome) is made in Section 3.4.

00098282

At the end of the third paragraph following the sentence: "These areas are under close surveillance and monitoring (see Section 4.1, Existing Mitigation Measure."), add an additional sentence: "The remainder of the TAPS route is also being monitored for changes in geotechnical conditions."

00098283

Refer to the sentence that reads: "The thawed ground at MP 735-736 may create potential for soil liquefaction if a major earthquake occurs near that general area."

To be accurate, it is suggested that the sentence be replaced with: "The thawed ground at MP 735-736 may create potential for soil liquefaction in scattered soil lenses and layers at depths less than 25 feet, if a major earthquake occurs in close proximity. Recent geotechnical field investigation and engineering analysis conducted by Alyeska indicate that the pipeline remains in compliance with TAPS design criteria for the changed geotechnical conditions."

A geotechnical and engineering investigation was conducted for the Milepost 735-736 area to assess the effect of changed conditions on the VSM supports and the aboveground pipeline. At Milepost 735, liquefiable sediment occurs only in lenses and layers penetrated in a few of the boreholes. These lenses and layers do not appear to be continuous across the site, and all are at depths less than 25 ft. The small amount of liquefiable sediment encountered and the lack of continuity of liquefiable layers between boreholes indicate that lateral ground displacement, through flow failure or lateral spread, is unlikely. If a loss of shear strength occurs in the potentially liquefiable lenses and layers, the VSMs should still retain sufficient friction and bearing capacity to support gravity loads. Potential changes in VSM capacity were investigated in a seismic response analysis. The results of this analysis indicated the pipeline and VSMs to be in compliance with TAPS stress criteria.

At Milepost 736, most of the sediment in the upper 20 to 30 feet of the soil profiles at Mileposts 736 appears to have blow counts in the liquefiable range and to be composed of sandy silt with some coarser grained material, a type of sediment that is typically liquefiable. The site conditions at Milepost 736 indicate a flat, wetland area with high water table, but little ground slope. The flat terrain precludes potential for widespread flow failure and lateral spread.

In conclusion, based on recently obtained geotechnical information, it appears that liquefaction is possible only in scattered lenses and layers generally less than about 25 ft deep. The possibility of a temporary loss of shear strength was factored into an engineering investigation of the aboveground pipeline and VSMs, and the pipeline was found to remain in compliance with TAPS stress criteria. There is no concern for general site instability, i.e., due to lateral movement of soil mass. .

(Reference: MP 735 Aboveground Pipeline Assessment, Michael Baker Jr., Inc., December 2001. -- See Argonne Document #3349)

00098284

1. In the sentence that reads, "However, locally overstressed conditions might develop along the pipeline if the extent of the liquefaction area was intermediate", we suggest changing the word "intermediate" to "extensive".

2. Following the sentence, "The pipeline would also become vulnerable if a landslide occurred on a cross slope, resulting in the pipe's being carried down the slope with the slide (APSC 2001e)," we suggest adding the following sentence to alleviate concern that there are potentially hazardous areas that Alyeska has ignored:

"Based on available geotechnical data and ongoing surveillance and monitoring programs, Alyeska is unaware of any field geotechnical conditions that could potentially lead to earthquake-induced ground failure of sufficient severity to cause pipeline failure (loss of pressure integrity)."

Note that Section 4.1.2.4 acknowledges that the pipeline has been designed for ground movements.

00098285

General Comment: DEIS ignores the fact that liquefaction can occur only in a rather narrow range of geologic and soil environments characterized by granular soils that remain loose and uncemented after deposition and lie beneath a shallow ground water table. This typically involve relatively young deposits during recent geologic time (modern or late-Quaternary eras, but presumably could happen in older deposits that were frozen soon after deposition. Quite often, permafrost has a high silt or clay content, which would preclude liquefaction. It is acknowledged that subsidence of the ground surface could result when permafrost thaws, but this is not liquefaction, and it would occur as thawing progresses, and not wait until an earthquake happens. In conclusion, thawed deposits could be liquefiable if they contain the requisite loose granular soils, not flocculated clay or loosely packed silt.

Refer to the following two sentences: "This weakening can be significant in soils composed of loosely packed silt or flocculated clay with a high content of ground ice. When these soils are shaken by strong ground motions during an earthquake, liquefaction may result."

Suggest deleting the above two sentences and replacing with: "This weakening can be significant in soils composed of loosely packed silt or flocculated clay with a high content of ground ice and may lead to subsidence of the ground surface." If the thawed soils are saturated, loose granular deposits, strong earthquake ground motions could cause them to liquefy.

00098286

The DEIS states that mineral material sites and disposal sites are used for ". . .general pipeline maintenance and handling of hazardous and nonhazardous waste." This implies, incorrectly, that Alyeska uses these sites for hazardous waste disposal. This is not the case. There are few instances when hazardous waste would actually be handled in any manner at material sites and disposal sites. This statement should

00098287

The sentence states: "No direct spills to surface water have been documented." This is not accurate. There have been pipeline spills to surface water, such as the Atigun pipe buckle and there are spills to Port Valdez from tanker loading. The point should be that spills to surface waters are very infrequent.

00098288

More recent information on MP 400 spill response has been supplied to Argonne. (See Argonne Documents #3199 and 3272)

00098289

Add "also" before "governed" in first sentence.

00098290

In this paragraph the DEIS states that "Volumes of sanitary wastewaters delivered to the turbine exhausts or treated at pump stations are nominally low and normally do not exceed 12,000 gal per year." This number is incorrect, it should read: ". . . approximately 12,000 gal per day."

00098291

This paragraph states "Ultimately, and always after no more than 2 years of storage, contaminated media are trucked to a commercial facility where they undergo thermal treatment." This statement is generally correct, but it is a common practice to store more than 2 years with ADEC approval. This allows time to accumulate and achieve some economy of scale. In most cases the VMT stockpiles soils for more than 2 years.

"Ultimately, and always" should be changed to "Typically." Non-hazardous petroleum-contaminated soils from spill cleanup can remain in storage for more than 2 years before being remediated if approved by ADEC. Alyeska has from time to time

00098292

The TAPS Owners have applied for renewal of an array of rights, ranging from the mainline right-of-way to oil spill contingency plan sites. See TAPS Owners' Applications, Line Lists at Vol. 2, Tabs D through H. Those rights are properly identified in portions of the DEIS, see, e.g., p. 2.1, but are too narrowly described elsewhere in the document, see, e.g., pp. ES-1 to ES-2, 1-2 to 1-7, and 1-7 to 1-8. Given the criticality of the description of the rights to be renewed to the analysis being undertaken and the decision that the BLM is making, the DEIS should be modified to accurately and comprehensively describe the rights under analysis that will be

00098293

The TAPS Owners have applied for renewal of an array of rights, ranging from the mainline right-of-way to oil spill contingency plan sites. See TAPS Owners' Applications, Line Lists at Vol. 2, Tabs D through H. Those rights are properly identified in portions of the DEIS, see, e.g., p. 2.1, but are too narrowly described elsewhere in the document, see, e.g., pp. ES-1 to ES-2, 1-2 to 1-7, and 1-7 to 1-8. Given the criticality of the description of the rights to be renewed to the analysis being undertaken and the decision that the BLM is making, the DEIS should be modified to accurately and comprehensively describe the rights under analysis that will be

00098294

The first and last sentences of this paragraph are contradictory. The first sentence says that moose are a relatively recent resident of the North Slope and the last sentence says that the reason for the dramatic decline of the adult moose population throughout the North Slope in recent years is not known. There is no reference given or basis for saying that the moose population on the North Slope is, in fact, declining.

00098295

Suggest that the Environmental Atlas for the Trans Alaska Pipeline System be included in the documents referenced as incorporating ". . . environmental considerations. . ." The Environmental Atlas provides information on important fish and wildlife considerations for TAPS.

00098296

There is also a septic system at VMT that is not mentioned in this section. It is a relatively minor issue, but should be corrected.

00098297

Box Entitled: Dust Shadow -- There is a note box that discusses the dust shadow for the Dalton Highway. It may be useful to point out that the "dust shadow" will become less of an issue with the ongoing upgrading of the Dalton Highway by ADOT/PF. The new sections that have been "chip sealed" have very little dust. ADOT/PF over the next several years plans to complete "chip sealing" of most, if not all, of the Dalton

00098298

The summary of impacts in this table says that a negative effect reducing subsistence is "(e.g., continued TAPS-related traffic on the Dalton Highway possibly disrupting migration)". There is no basis for this statement to be in the summary. There is no finding in the text of the subsistence section to support such a statement. The statement should be eliminated or reworded to reflect the language in the text.

00098299

Box Entitled: Hazardous Waste Management Under the No-Action Alternative -- This paragraph makes reference to "Alyeska-owned landfills". There are no "Alyeska-owned landfills", only "Alyeska-operated landfills". The 3 landfills that Alyeska operate are on BLM lands for which we have land rights. The term "Alyeska-owned landfills" is also used elsewhere in this section.

00098300

In the spill scenarios there is not a 3,000 bbl diesel spill. Does this refer to the 3,000 "gal" diesel spill (see Table 4.6-2).

00098301

The problems associated with degradation of permafrost have been well recognized by Alyeska Pipeline Service Company since the original design of the TAPS. The design assumes that all buried pipeline segments will thaw surrounding permafrost, where permafrost is present. Additionally, Alyeska assumed that the thermal disturbance of the workpad would initiate thawing of permafrost in the aboveground segments except around VSM (piles) that were protected by thermosyphons. The exception is the aboveground pipeline workpad located in the northern section where a special insulated workpad limits thawing beneath the workpad in cold permafrost (mean annual temperature less than -5 degrees C).

Alyeska conducted detailed analysis of all pipeline slopes and assessed the liquefaction potential of all slopes, including permafrost slopes. The liquefaction assessment program assumed all permafrost slopes could thaw. The frozen slopes identified as having a high potential for liquefaction were addressed in the original design the same as thawed slopes with a high potential for liquefaction.

Where potentially unstable slopes could not be avoided, mitigative design measures were employed to assure long-term integrity for the pipeline. For aboveground design segments the most common measure was the required use of thermal VSM supports. For the belowground the most common was deep burial below the potentially liquefiable soils. Other buried pipeline mitigation used was the grading of slopes to less than 2 percent, removal and replacement of potentially liquefiable soils and a special design with insulated pipe and thermosyphons.

Detailed documentation of the original design and procedures is available in the document, Trans Alaska Pipeline System, 1974, Appendix Volume 3 - Geotechnical Aspects. This is Argonne Document #133 of ER literature cited material.

00098302

The fourth sentence states that, "The effects of TAPS on the processes can involve disruption of the stability of the thermal regime of the permafrost, resulting in degradation (melting). . ."

The disruption of the stability of permafrost and the consequences of thawing has been recognized in Alaska since the time of early pioneers. The disruption of the stability of permafrost is a critical element in the design of TAPS. The design accounts for the long-term degradation caused by the disturbance of permafrost areas by construction grading and interaction between permafrost and the warm pipeline. One of the major mitigative measures was the development of an aboveground design that decouples the warm oil from permafrost. The stability of the supports for the aboveground design is protected by thermosyphons in areas of potentially unstable permafrost.

After 25 years of TAPS operation the effects of thermal disturbance are approaching equilibrium. Increased warming due to climate change may have a minor effect on the continued, but very slow progression of thawing. The initial increase in heat input into the permafrost soils caused by the change in surface heat balance (decreased albedo) due to the civil grading (aboveground) and the combined effect of the civil grading for maintenance and operation of the warm buried pipeline most likely is greater than any current or anticipated effects from warming climate.

00098303

The statement is made that "Frost heaving commonly occurs in silty soil and is caused by expansion in soil volume because of the formation of ice in soils".

For accuracy, this sentence should be replaced by the following: "Frost action in fine-grained soils increases the volume of the soil not only by freezing of in situ pore water (about a 9 percent expansion) but also by drawing water to the freezing front where ice lenses form."

00098304

Frost heave and subsidence is not just related to the TAPS ROW. Frost heave and subsidence have historically (and prehistorically) occurred throughout Alaska.

There is no technical basis for stating that the settlement of a VSM can cause integrity problems in the aboveground pipeline system due to differential settlement. The aboveground pipe is capable of losing a minimum of two adjacent supports (four VSMs) without excessive pipe bending.

For buried pipe, the thaw bulb has reached its maximum extent and any thaw-unstable areas not detected during design and construction phases were expressed as differential pipe settlement in the early years of operation. Since the buried pipe thaw bulb reached maximum extent earlier in the operations phase, no differential settlement is expected to occur during the renewal period. Therefore, for both above-ground and buried pipe, pipeline integrity threats from permafrost changes are not expected.

00098305

The DEIS states; "As the pipeline ages. . . Activities on the part of the owners to maintain the pipeline [delete: would] [add: could] change."

00098306

Potential slope instabilities or liquefaction-susceptible soils were assessed and identified for the entire TAPS route. See comment for section 3.3 below. The buried pipeline was installed within zones of potentially liquefiable soils only where the ground slope was less than two percent (therefore no soil movement during potential liquefaction) or in special design areas where the special insulated pipeline is protected by maintaining frozen conditions.

Section 3.3 comment: The problems associated with degradation of permafrost are well recognized by Alyeska Pipeline Service Company since the original design of the TAPS. The design assumes that all buried pipeline segments will thaw surrounding permafrost, where permafrost is present. Additionally, Alyeska assumed that the thermal disturbance of the workpad would initiate thawing of permafrost in the aboveground segments except around VSM (piles) that were protected by thermosyphons. The exception is the aboveground pipeline workpad located in the northern section where a special insulated workpad limits thawing beneath the workpad in cold permafrost (mean annual temperature less than -5 degrees C).

Alyeska conducted detailed analysis of all pipeline slopes and assessed the liquefaction potential of all slopes, including permafrost slopes. The liquefaction assessment program assumed all permafrost slopes could thaw. The frozen slopes identified as having a high potential for liquefaction were addressed in the original design the same as thawed slopes with a high potential for liquefaction.

Where potentially unstable slopes could not be avoided mitigative design measures were employed to assure long-term integrity for the pipeline. For aboveground design segments the most common measure was the required use of thermal VSM supports. For the belowground the most common was deep burial below the potentially liquefiable soils. Other buried pipeline mitigation used was the grading of slopes to less than 2 percent, remove and replacement of potentially liquefiable soils and, special design with insulated pipe and thermosyphons.

Detailed documentation of the original design and procedures is available in the document, Trans Alaska Pipeline System, 1974, Appendix Volume 3 - Geotechnical Aspects. This is Argonne Document #133 of ER literature cited material.

00098307

Climate change to a warmer climate may be a trend in Alaska. Sentences seven and eight refer to temperature increases and a lowering of the permafrost table in Fairbanks, Alaska. Unless the monitoring site is in disturbed terrain, it is inconsistent with Figure 3.12-4 that shows a cooling trend for Fairbanks.

Additionally, the first graph on Figure 3.12-4 is unlabeled.

00098308

The statement is made that: "The construction and operation of a buried warm-oil pipeline could induce thaw in permafrost soils". This statement should be changed to read, "The construction and operation of a buried warm-oil pipeline has thawed permafrost soils".

The TAPS was buried in permafrost areas only where soils below the pipe were determined to be thaw-stable. Surficial soils (above the pipeline) in a particular buried segment may be fine-grained and ice-rich. The thawing of the soils located above the buried depth of the pipeline have resulted in subsidence of the ground surface and in some cases the down slope movement of the thawed mass as the thaw bulb formed. None of the above consequences affect the integrity of the pipeline.

Examples are documented in the following reference:

Metz, Michael C., T.G. Krzewinski, and E.S. Clarke, 1982, "The Trans-Alaska Pipeline System Workpad - An Evaluation of Present Conditions", The Roger J.E. Brown Memorial Volume, Proceedings Fourth Canadian Permafrost Conference, National Research Council of Canada. (See Argonne Document #3356)

00098309

The flow of warm oil in a buried bare pipeline results in long-term thawing of permafrost soils. The growth of the thaw bulb is caused primarily by the flow of warm oil through the pipe, but also by the presence of the workpad and disturbed construction surface. Add "thaw stable" before "permafrost." See comment on section 3.3.2 below.

Comment 3.3.2: The fourth sentence states that, "The effects of TAPS on the processes can involve disruption of the stability of the thermal regime of the permafrost, resulting in degradation (melting). . ."

The disruption of the stability of permafrost and the consequences of thawing has been recognized in Alaska since the time of early pioneers. The disruption of the stability of permafrost is a critical element in the design of TAPS. The design accounts for the long-term degradation caused by the disturbance of permafrost areas by construction grading and interaction between permafrost and the warm pipeline. One of the major mitigative measures was the development of an aboveground design that decouples the warm oil from permafrost. The stability of the supports for the aboveground design is protected by thermosyphons in areas of potentially unstable permafrost.

After 25 years of TAPS operation the effects of thermal disturbance are approaching equilibrium. Increased warming due to climate change may have a minor effect on the continued, but very slow progression of thawing. The initial increase in heat input into the permafrost soils caused by the change in surface heat balance (decreased albedo) due to the civil grading (aboveground) and the combined effect of the civil grading for maintenance and operation of the warm buried pipeline most likely is

00098310

The fourth sentence states, "The shrinking and growing of thaw bulbs could promote frost heaving and settlement, respectively, near the TAPS".

The thaw bulb beneath the TAPS workpad and beneath the TAPS buried pipeline is approaching equilibrium after 25 years of operation. Further expansion of the thaw bulb will be limited.

The possibility that the thaw bulb will shrink in buried pipeline areas (due to aggrading permafrost from the base of the thaw bulb or laterally from the sides) will depend on the temperature of the pipeline (at low flow rates), the continued thermal impact of the workpad and disturbed construction zone, and the temperature regime of the surrounding permafrost. On the northern end of the pipeline (north of Atigun Pass) the permafrost is cold (mean annual temperature less than -5 degrees C) and it is conceivable that some refreezing of the thaw bulb can take place, even with a warming climate. In the warm permafrost region (south of Atigun Pass) little or no refreezing is expected due to the continued thermal input from the pipeline (even at low flow rates) and solar input through the workpad.

Whether or not refreezing of thaw bulbs in permafrost will occur is a non-issue for TAPS. The very nature of the thaw-stable soil required for burial in permafrost, and as defined in the TAPS Stipulations makes it also a non-frost susceptible soil. Frost heave would therefore not be expected to occur, upon refreezing of these soils below the pipe.

00098311

Alyeska continues to monitor processes that could impact the pipeline and the changing conditions on the pipeline route. As provided in the comment on section 3.3, one of the common mitigative designs in the aboveground design for potentially liquefiable areas is the use of thermal VSMs. Maintaining a frozen bulb around each VSM bent is critical to the stability of the support if a liquefaction event occurs. Alyeska has identified the possibility that there may be isolated areas where the frost bulb around the VSM is not being maintained as intended in the original design.

As part of an ongoing program to maintain the pipeline, Alyeska Pipeline Service Company is conducting a comprehensive study to review and reevaluate potential liquefaction concerns related to the TAPS. The study is designed to utilize information beginning with the original mile-by-mile design and liquefaction evaluation integrated with post construction monitoring information and new information on changed conditions of the ROW. The program will provide an update of potential liquefaction hazards for the TAPS and provide a comparison database for continued monitoring and tracking of conditions that could affect potential liquefaction hazards.

00098312

Recordable injury rates are overstated in the DEIS. The last four year average is 61 recordables per year. During 2002 through July 21, there have been 29 total recordable injuries for Alyeska and their contractors combined. During 2002 through July 21, there were 9 Lost Time injuries. The 4-year average for Lost Time injuries is 19.

It is not clear whether the statics provided in this sentence reflect average rates since

00098313

Similar to comment from 3.17.1 -- regarding Pump Station Fire Protection Response Team

On reading this last sentence and referenced Table 3.1-5 -- it seems to imply that the Pump Stations have stand alone resources that make up a Fire Protection Response Team. These are not stand-alone teams of individuals. The main duty of the personnel on site is operations and maintenance, one duty for them is to support and man an Emergency Response Team for their facility. One function of that ERT is to respond to a fire.. There is periodic first responder fire response training, and annual ERT Leader training.

The Pump Stations are not like the Valdez Marine Terminal that have specific teams trained for Fire Protection as a Fire Brigade.

00098314

This sentence, implies that Pump Stations have dedicated fire protection response teams, whose only function is fire protection response.

It would be better to state that Operation and Maintenance personnel also have emergency response duties, one of which is initial fire response. Other emergency response duties include evacuation, oil spill, chemical spills, medical emergencies, security issues, etc. It would be better to use the term "Emergency Response Teams" instead of Fire Protection Response Teams.

00098315

The DEIS treatment of incident rates is very confusing because in some places rates are reported per 200,000 man-hours, in other places rates are reported per 100,000 FTEs, and other in places rates are reported per 100 full-time workers. It would be much cleared to select a single method and use it consistently.

For example: In Table 3.17-1, there is a Note (b) that provides the formula for the incidence rate -- it uses 200,000 man-hours. In the next paragraph fatalities are calculated using 100,000 FTE's (Full time equivalents) and references Table 3.17-1

00098316

This comment applies to Table 4.3-4 also.

These sections (and table) point out that the ambient concentrations of HAPs measured in 1990-91 were employed to determine the human cancer risk resulting from continued pipeline operation. While it is appropriate to determine cancer risk for the pipeline operations through the end of 1997, it is not appropriate for periods after that. This is because the emissions of the HAPs from the VMT have decreased dramatically (by a factor of 10 by 2001) as a result of operational changes and the installation of tanker vapor controls. As such, the concentrations measured in 1990-91 no longer exist -- particularly at the VMT fenceline.

The ambient HAP concentrations were scaled based on pipeline throughput levels and it would be proper to also scale them down by a factor of the emission reduction in estimating the future cancer risk. If this were done, the cancer risks, particularly at the VMT fenceline, would very likely be substantially lower.

00098317

This table lists the nearest town to the VMT as two miles to the east. This is incorrect. As can be seen in Figure 4.3-3 on page 4.3-41 the nearest town or resident is about 4 miles to the north. Going east, the nearest resident is 6-7 miles away.

00098318

Seismicity: Change "likelihood of happening is unknown" to "happening is highly

00098319

The TAPS general location map could be improved by: 1) deleting the "north slope pipeline", which is almost invisible, perhaps substituting a general location of the North Slope oilfields; 2) showing the Mackenzie River connecting to the Beaufort Sea; 3) consider adding the Canning River, Kaktovik, and perhaps the boundaries of the NPRA and ANWR, and 4) providing the name of the Copper River.

00098320

Drag reducing agent is first mentioned here. While it is described in detail later, a footnote referring to the later description or providing brief explanation of its nature and the role of this key substance would be helpful here. e.g., "Drag reducing agent (DRA) is a viscous hydrocarbon added in small quantities to the crude oil to improve flow in the pipeline. See page --"

00098321

The text concerning the relationship of TAPS to BLM policies, plans and programs would better fit into the introduction with an explanatory paragraph which details the significance or relevance to the EIS of the BLM multiple use plans. After the first sentence, perhaps insert something like: "These plans set forth specific BLM land management and use policy within the area boundaries. All three plans recognize the importance of energy production and transportation on these BLM-managed lands and are consistent with long term continuation of TAPS operations as well as further energy exploration and development in the plan areas adjacent to, or which could be served by, the pipeline. Accordingly, existing BLM policies and plans are consistent with the proposed action."

00098322

Figure 1-4 is a photo of PS-1, which is more complex than, and atypical of, an average pump station. The text should be amended (in Section 1-3 "Pump Stations") to indicate that the figure is PS 1, or the figure itself labeled, or the photo of another PS used showing more typical features and configuration.

00098323

The fourth paragraph needs its own heading -- the matters discussed in that paragraph do not relate to subsistence. A possible heading "Discretionary Regulatory

00098324

The analysis of a shorter term renewal does not include consideration of the effects of what is likely to occur at the end of the shorter term. If the TAPS owner predictions about the viability of the pipeline well beyond 2034 are correct, the ROW renewal process will simply recur, and the substantive differences in the two alternatives will be minimal except for the very significant costs of discouraging, through uncertainty, further Alaska petroleum exploration and development--and the non-trivial costs of the renewal process itself.

00098325

The description of the North Slope would be more correctly stated (line 4, 1st paragraph) as follows: The North Slope is a gently sloping to flat, treeless plain, covering about 88,000 square miles, extending from the foothills of the Brooks Range to the Beaufort Sea (Arctic Ocean). It encompasses the coastal plain portion of the Arctic National Wildlife Refuge, the westernmost boundary of which is located about 90 miles east of the Prudhoe Bay oilfield. . .Prudhoe Bay is also used generally to describe the oil exploration and development province on Alaska's North Slope, which includes more than a dozen separate oilfields spread across several hundred square miles of land in the vicinity of Prudhoe Bay.

In the 2nd paragraph, 1st line should read: "Modern petroleum exploration and development. . . "

Page 3.1-22, 2nd paragraph:3rd line, add (or place in a footnote) "Oilfields are legally organized into producing units, which customarily group all of the owners of the leased area over a petroleum accumulation to avoid conflicts over extraction and ownership of the resource." 5th line "This unit (delete 'essentially') began production. . ." 7th line "Recent developments combined with (in) the Prudhoe Bay Unit include. . ."

Page 3.1-22, paragraph 3: The seawater treatment plant at Oliktok Point is part of the Kuparuk River Unit, so the two sentences discussing the Milne Point Unit, should be moved to the end of 3rd paragraph.

Page 3.1-22, Paragraph 5. Delete mention of Liberty. You might want to add mention of the Phillips discoveries in the NPRA and the exploration leasing and potential in that federal area. Also, add the following to the end of the last sentence: (E)exploration, and oil companies continue to explore for and develop new resources in the region. However, despite intense efforts, no petroleum deposits of the size needed to fully replace the declining production of the giant Prudhoe Bay field have been found, nor are any likely to be found. New discoveries are smaller and likely to be farther away from existing infrastructure, making them costly and economically marginal, especially if oil prices fall. Further, the cycle between lease acquisition and full production is frequently in excess of a decade. All of these factors highlight the increasing importance of a stable and efficient oil transportation system.

00098326

A number of the discoveries shown on the map are not "producing oil fields" (e.g. Liberty, Tabasco(?), Ugnu , maybe others.

The map could also be improved a bit by changing some confusing features: e.g., delete the Point McIntyre and Ugnu-Kuparuk place names in different type, delete the TAPS fuel gas pipeline, make all pipelines the same color, delete Umiat from the small location map. Is NPRA correctly titled? (Is it "National Petroleum Reserve Alaska" or "in" Alaska?)

Because the EIS evaluates the possibility of future production, it might be useful to

00098327

The effects of a less-than-30-year renewal on the implementation of a natural gas project are omitted here in the assessment of economic effects. While these effects are appropriately discussed in the cumulative effects sections, they are important enough to be mentioned here as well. If the TAPS ROW renewal were for a shorter term, decision making on a gas pipeline or other natural gas commercialization projects(s) would have to take into account the possibility that the existing oil infrastructure would be unavailable to or fully supported by the gas project, making the gas project significantly more expensive and risky. This in turn could foreclose or defer the gas project and would at very least have an adverse effect on the cost and availability of capital needed to finance the project, lowering returns to the state and

00098328

If the no action alternative were selected, a gas pipeline or other commercialization alternative would probably be precluded or made much more difficult to bring to fruition. The financial and practical success of any gas project depends upon sharing the existing oil production infrastructure, including wells, processing facilities, utilities, and services. If the North Slope oilfields were closed or in the process of being ramped down, the gas project alone would have to bear the costs of reconstructing or reinstituting those facilities, an overwhelming burden. As the DEIS recognizes, this issue would be included in a subsequent , thorough environmental review should the no action alternative be selected. However, because a gas project is so important to the projected economic future of the state, at least a brief mention of the probable interrelationship of the two events should be included in the analysis here. In any event, there does not appear to be any discussion about the fate of the natural gas in the economic analysis of the no action alternative.

00098329

This comment also applies to Figure 04.07-03 and Figure 04.07-06.

The tables and maps could be improved by providing a North Slope vicinity map that shows the location of the named oil fields and exploratory locations. The time series maps provide an excellent depiction of the general extent of activity, but do not identify specific oil field locations.

00098330

"Supporting infrastructures" (line 3) should include oil and gas separation and processing facilities. . .

Paragraph 1, last sentence could be more complete, by being modified to read: "Facilities enabled in remote locations, including those offshore or distant from the Prudhoe Bay and Kuparuk fields, vary in configuration from those closer to the principal infrastructure centers; they are more compact and are generally designed to operate with minimal personnel."

A general comment -- it might be helpful to provide in connection with the discussion on pages 4.7-19 and following a simple diagram showing how facility and well design and practice has changed over time. These are available from the field operators, and would be a useful supplement to figure 4.7-7 in understanding the discussion.

00098331

On page 4.7-37, paragraph 1, the last sentence could be improved by modifying it to read: "While it is not entirely clear (that) how and when this gas will be commercialized, the two most likely gas commercialization projects are described in some detail below for purposes of this analysis (to be) as surrogates for whatever project might eventually be built." The following might then also be added: "It seems likely that it would take at least a decade to complete any gas commercialization project, although the decision on a project and commencement of construction could come sooner. However, recent declines in natural gas prices and routing controversies have once again reduced enthusiasm for rapid commencement of an Alaska North Slope natural gas commercialization project."

In the second paragraph, after the sentence describing the LNG option, add a sentence stating: "Another project discussed but not considered reasonably foreseeable is the construction of a gas-to-liquids production facility on the North Slope that would convert natural gas into liquid hydrocarbons for shipment to Valdez on TAPS."

The last two sentences in the second paragraph could be improved by reading as follows: "Although it is not clear which proposal might eventually be developed, it was considered reasonably foreseeable that within the 30 year proposed action ROW renewal period a natural gas commercialization project would be in place. The cumulative effects analysis accordingly uses assumptions about the project and its implications based upon the two most likely alternatives -- the southern route pipeline and the LNG project."

00098332

A general comment about North Slope Water use: a significant percentage of fresh water used in the developed oilfields comes from flooded gravel mine sites rather than (natural) "lakes". Fish have migrated into or been transplanted in several of these reservoirs, so withdrawals can be limited just as they are from natural lakes. Generally, these mine site reservoirs are much deeper than the natural lakes in the vicinity, and both are refilled annually by river overflows and surface sheet flow each

00098333

The assumption that gas production and exploration on the North Slope would continue in the event that the no-action alternative were to be selected is wrong. As noted in prior comments, any gas commercialization project would depend physically and economically upon the continued operation of the existing oil production and related facilities. If oil production were stopped and the facilities mothballed or removed, the gas project would face substantial cost increases. Moreover, although a small amount of gas might be cycled if oil production were stopped (relative to what is cycled now), it is not correct to imply that gas production would continue at current

00098334

A general comment about North Slope groundwater resources. The DEIS gives the reader the impression that conventionally understood groundwater exists on the North Slope. This is erroneous, since the North Slope is underlain by a thick layer of permafrost, which is not penetrated by surface discharges. There is some surface water flow in the summer as the top layer of the permafrost melts to about 2 feet, but this and virtually all other fresh water subject to oil exploration and development activities would properly be called surface water. Deep well injection also occurs, but into saline or oil producing formations thousands of feet deep which do not qualify as groundwater resources.

00098335

Transportation of North Slope oil to Alaska refineries would stop in the event that the TAPS ROW were not renewed.

00098336

The North Slope underground injection wells used to dispose of produced water or production wastes are Class II, not Class I.

00098337

If the no action alternative were selected, and TAPS dismantled starting in 2004, activity in the oilfields would cease. It would be unreasonable to expect the gas project to commence in 2010 given that the oil fields would have been abandoned for six years at that time.

The second sentence of this section in discussing the renewal of the Federal Grant and related facilities contains several inaccuracies. First, where the DEIS states that "The renewed Federal Grant would cover not only the original TAPS ROW. . . but also. . .(the related facilities). . . ," it inaccurately indicates that the renewed Federal Grant would encompass the various separately granted related facilities. In fact, the renewed ancillary facilities would continue under separate rights-of-way. Second, the use of the word "originally" at item 2 of the sentence pertaining to access roads fosters the misimpression discussed above. Third, items 4 and 5, generically referencing the Prospect Power & Communication Line and the Gulkana Communication Site and Access Road, respectively, should be revised to more accurately cover the subject rights.

In order to resolve the inaccuracies described in the preceding paragraph, the second sentence of Section 2.2 on page 2-1 of the DEIS should be revised to read as follows:

The renewal of the Federal Grant would cover not only the original TAPS ROW issued under two serial numbers (F012505 and AA-5847) but also the ROWs for (1) a fuel gas pipeline that provides gas from Prudhoe Bay south to PS 4, (2) access roads authorized under numerous serial numbers, (3) oil spill contingency plan sites authorized through an MOU issued in June 1991, (4) a power and communication line running to the Prospect Airport, and (5) a communication site and associated access road near the Gulkana River crossing of TAPS (see the "line List" furnished as part of the TAPS Owners' application for renewal, as amended [see

The referenced section and pages discuss the Alaska Coastal Management Program ("ACMP"); however, the discussion contains some inaccuracies:

This section states that the Alaska Coastal Management Act ("ACMA") was last amended in 1994; however, the Alaska Legislature last amended the ACMA during its most recent 2002 legislative session.

This section mischaracterizes the scope of the ACMP as encompassing "all activities that occur within a coastal zone or that may affect coastal resources." The applicability and scope of the ACMP has recently been clarified in regulations approved by the Alaska Coastal Policy Council. Although these regulations are not yet effective, they are intended to restate existing law. As indicated in what will shortly become a revised version of 6 AAC 50.005, the ACMP is only applicable to (i) projects that require one or more of a specific list of state permits, (ii) federal activities, or (iii) projects that require one or more of a specified list of federal permits, AND then only if the project also is either (i) located in the designated state coastal zone, or (ii) is subject to a federal consistency determination under 15 CFR 930. Thus, the ACMP does not apply to "all activities that occur within a coastal zone," nor does it apply to projects that "may affect coastal resources" but are located outside the coastal zone. A copy of the clarified version of 6 AAC 50.005 recently approved by the Alaska CPC is provided for the record as Attachment A -- below.

The CPC's clarifying revisions to the ACMP regulations are clear that renewals, such as the present proposed action, are exempt from ACMP review. A copy of the CPC's revised 6 AAC 50.720 is provided for the record as Attachment B -- below.

Section 3.27.2 concludes by stating that the TAPS operations and maintenance "have been found to be consistent with" the North Slope Borough and Valdez Coastal Management Programs. It is certainly true that many operational aspects of TAPS, including the spill prevention, response and control plans, have undergone previous periodic ACMP reviews and have been found to be consistent with the NSB and Valdez CMPs, as well as the applicable state-wide ACMP standards. However, the statement in the DEIS as written could be misinterpreted to imply that the State of Alaska has already found the proposed TAPS renewal to be consistent with the ACMP. The TAPS owners have submitted an application for a consistency review; however, that review is being coordinated with this NEPA process and has not been concluded at this time. This statement should be corrected to state that the applicant has submitted a certification that the proposed action is consistent with the ACMP -- a determination over which the State of Alaska may concur after completing its separate but coordinated processes.

These same comments are equally applicable to the other discussions of the ACMP in the DEIS (e.g., § 4.7.4.7.3 at page 4.7-43; Appendix A, § A.12.2).

****

Attachment A

6 AAC 50.005
AS ADOPTED BY
THE ALASKA COASTAL POLICY COUNCIL,
JULY 2002

6 AAC 50.005. APPLICABILITY OF THE ACMP CONSISTENCY REVIEW PROCESS. (a) A project is subject to the consistency review process described in this chapter when

(1) any activity that is part of the project
(A) requires a state agency authorization identified under 6 AAC 50.750;
(B) is a federal activity;
(C) requires a federal authorization identified under 6 AAC 50.405; or
(D) is described in an Outer Continental Shelf (OCS) exploration or development and production plan; and

(2) the activity is
(A) located within the coastal zone; or
(B) subject to a consistency determination under 15 C.F.R. 930.

(b) Only one consistency review process applies to a project. The consistency review process described in
(1) Article 2 (6 AAC 50.200-.280) applies when a project requires only an authorization from one or more state agencies;
(2) Article 3 (6 AAC 50.305-.395) applies when a project is a federal activity that may also require a state agency authorization; and
(3) Article 4 (6 AAC 50.405-.495) applies when a project requires a federal authorization or is an OCS exploration or development and production plan that may also require a state agency authorization.

(c) The consistency response under 6 AAC 50.305-.395 or 6 AAC 50.405-.495 is the only consistency determination required for a project that is a federal activity or federally regulated activity that may also require a state agency authorization.

(Eff. ___/___/200__, Register ___)
Authority: AS 44.19.145, AS 44.19.161, AS 46.40.096
AS 44.19.160, AS 46.40.040

****
Attachment B
6 AAC 50.820
AS ADOPTED BY
THE ALASKA COASTAL POLICY COUNCIL
JULY 2002

6 AAC 50.820. AUTHORIZATION RENEWALS, RE-ISSUANCES, AND EXPIRATIONS. (a) When an authorization for an existing project is subject to renewal, re-issuance, or the authorization has expired and the applicant does not propose a modification to the project, no further action under this chapter is necessary.

(b) When an authorization for an existing project is subject to renewal, re-issuance, or the authorization has expired and the applicant proposes a modification to the existing project, the proposed modification shall be subject to the provisions of 6 AAC 50.810. (Eff. ___/___/200__, Register ___)

Authority: AS 46.40.040, AS 46.40.096

00098340

This section of the DEIS addresses fish in the affected environment and references essential fish habitat ("EFH") as determined pursuant to the Magnuson-Stevens Act on page 3.19-1 and elsewhere throughout the section. The BLM has prepared a specific EFH analysis and has initiated consultation with the National Marine Fisheries Service in compliance with the Magnuson-Stevens Act. See our comments below elaborating on the consultation and consultation document. The FEIS should reference BLM's EFH analysis and discuss EFH consistent with that analysis.

00098341

This comment also refers to Section 4.4.4.10.

These sections of the DEIS address impacts to fish under the proposed alternative for normal operations and with respect to oil spills. The BLM has prepared a specific EFH analysis and initiated consultation with the National Marine Fisheries Service in compliance with the Magnuson-Stevens Act. See our comments below elaborating on the consultation and consultation document. The FEIS should reference BLM's EFH analysis and discuss EFH consistent with that analysis.

00098342

Under the issue area "Soils and permafrost" in Table 4.3-23, impacts are summarized by stating that earthquake-triggered liquefaction from an "extremely large earthquake could threaten the integrity of the TAPS, causing spills, but would be highly unlikely." However, under "Seismicity," which is the next issue area in Table 4.3-23, it is stated that "soil liquefaction and landslides due to an extremely large earthquake could threaten the integrity of TAPS, although the likelihood of this happening is unknown." The latter statement is in conflict with the former and should be revised to reflect that such an occurrence is "highly unlikely."

Under the issue area "Biological resources" in Table 4.3-23, the impact summary states that "anticipated negative impacts to threatened, endangered, and protected species are not expected to exceed population-level impacts accompanying natural variation." This statement is of uncertain meaning and does not track well with either the conclusions reached in the DEIS or the related consultation by BLM under § 7 of the Endangered Species Act. As discussed in our comments below, the findings in the DEIS are that the proposed project will have either "none" or "negligible" impacts upon threatened, endangered, and protected species. As discussed in our comments below regarding the § 7 consultation, the BLM has found, and the National Marine Fisheries Service and U.S. Fish & Wildlife Service have concurred, that the proposed alternative is not likely to affect threatened or endangered species or designated critical habitat. It would be helpful for purposes of clarity if Table 4.3-23 summarized impacts by using the defined terms "none," "negligible" or "not likely to affect" rather than the present undefined terminology.

This comment also applies to Section 4.1.

The analyses in §§ 4.1 and 4.4 of the DEIS, supported by other relevant information and findings, lead to the conclusion that no additional mitigation measures should be recommended or adopted as a part of this ROW renewal process with respect to spill prevention, detection, response, and mitigation. This conclusion by BLM is well warranted and merits explicit elaboration in the FEIS.

Normal operations of TAPS are not anticipated to result in significant spills. Accordingly, the spill risk associated with the proposed alternative arises from the potential for accidental events or intentional criminal acts. Table 4.4-39 on pages 4.4-138 and --139 summarize the anticipated impacts under the analyzed spill scenarios. In general, the DEIS considers the consequences of spills for all impact areas under four probability categories: anticipated; likely; unlikely; and very unlikely. Included in these categories of pipeline spills are accidental leaks and spills during pipeline or pump station operations, leaks due to maintenance-related damage, leaks due to overpressurization from inadvertent RGV closure, valve leaks due to gasket failure or large packing leaks, leaks due to sabotage or vandalism, leaks due to washout damage from proximity to a stream or river, leaks due to corrosion, leaks due to pipeline settlement, leaks and cracks due earthquakes, and guillotine breaks of the pipeline due to a seismic initiated landslide and various catastrophic accidental or intentional events (impact of large truck, aircraft crash, or helicopter). See Table 4.4-1 at pp.4.4-4 through 4.4-6. Table 4.4-2 lists a similarly appropriate array of possible spill scenarios for the VMT. The DEIS generally finds that spill volumes and impacts increase as probability decreases. The DEIS makes explicit that, without downplaying the anticipated adverse significance of a severe accident at a sensitive location, it is important to place such events in the context that accidents of great severity are not probable during the renewal period, and would be subject to explicit response and mitigation requirements.

The existing mitigation measures applicable to TAPS are detailed in § 4.1 of the DEIS. Most of these mitigation measures are directly or indirectly relevant to pipeline or VMT spill prevention, detection, response, and mitigation. Thus, these existing measures are directed specifically to minimizing the likelihood of the actual occurrence of a spill as a result of the mechanisms identified in the spill scenarios, to detecting and responding to such spills in order to minimize spill impacts, and to mitigation measures in the event of a spill event. Categorically, these mitigation measures include:

-- JPO oversight, including a comprehensive adaptive monitoring program designed to ensure that TAPS activities (construction, operation, maintenance, and termination) are conducted so as to best protect the safety and health of the public and the environment. Activities having the greatest potential impacts to the environment and to pipeline integrity are examined more closely and more often under the JPO's risk-based compliance monitoring. JPO oversight includes coordinated planning and response for abnormal accidents. See DEIS § 4.1.1.

-- TAPS has numerous design elements designed specifically to reduce the potential for spills and to mitigate impacts of such spills. Major mitigating design features include special installation techniques and foundations, corrosion control features, earthquake mitigation measures, special design considerations for river crossings, TAPS valves (RGVs and check valves) as mitigation features, and main-line TAPS Leak Detection Systems. See DEIS § 4.1.2.

-- In addition to the intrinsic design features, numerous routine TAPS operations provide mitigation against potential spill occurrences and impacts, or provide reliable

data upon which response and mitigation decisions may be based. These monitoring, surveillance, and maintenance measures include pipeline integrity monitoring, corrosion control system monitoring, bridge monitoring, rivers and floodplains monitoring, seismic/earthquake monitoring, slope stability monitoring, glacier surge monitoring, and other measures. See DEIS § 4.1.3.

-- TAPS is also subject to detailed and specific federal and state spill prevention and response planning under authorities of many of the JPO agencies. Legislation and regulations enacted after the Exxon Valdez spill significantly strengthened spill prevention and response requirements and standards for oil tankers, terminals, pipelines, and oil exploration and production facilities. Current spill prevention and response plans applicable to TAPS are subject to periodic agency and public review. See DEIS § 4.1.4 (detailing the plans applicable to TAPS, the VMT, Prince William Sound tanker transport, and North Slope oil exploration and development).

-- Finally, many of the existing mitigation measures are directed specifically at the social, cultural, and economic impacts of potential spills, including mitigation of subsistence impacts. See DEIS § 4.1.5.

The reliability of the existing mitigation measures is demonstrable from the observed impacts from existing and continuing operations. When combined with the adaptive nature of the Federal Grant, JPO monitoring and specific spill control prevention and response planning, the BLM's determination that additional mitigation measures are not needed at this time is reasonable and well supported by the record.

One additional related subject merits further discussion. Security measures, including related surveillance and monitoring, are generally outlined in the DEIS. See, e.g., DEIS at p. 3.1-16. Security measures are an important aspect of TAPS operations related to spill prevention and monitoring, and are the subject of specific JPO oversight, monitoring, and review. However, there is an inherent and very real tension, particularly in light of the heightened concerns of recent times, between public disclosure of security measures and the effectiveness of such security surveillance and other measures. While the TAPS' owners believe that the confidentiality of TAPS' security measures is of paramount importance, the FEIS should nevertheless, clarify in greater depth that BLM and JPO have carefully reviewed and considered TAPS security measures, monitor such measures regularly for adequacy, and find that

The record on ACMA should be corrected as discussed on our comment for Section 3.27.02. That comment is repeated below:

Section 3.27.2 Comment: The referenced section and pages discuss the Alaska Coastal Management Program ("ACMP"); however, the discussion contains some inaccuracies:

This section states that the Alaska Coastal Management Act ("ACMA") was last amended in 1994; however, the Alaska Legislature last amended the ACMA during its most recent 2002 legislative session.

This section mischaracterizes the scope of the ACMP as encompassing "all activities that occur within a coastal zone or that may affect coastal resources." The applicability and scope of the ACMP has recently been clarified in regulations approved by the Alaska Coastal Policy Council. Although these regulations are not yet effective, they are intended to restate existing law. As indicated in what will shortly become a revised version of 6 AAC 50.005, the ACMP is only applicable to (i) projects that require one or more of a specific list of state permits, (ii) federal activities, or (iii) projects that require one or more of a specified list of federal permits, AND then only if the project also is either (i) located in the designated state coastal zone, or (ii) is subject to a federal consistency determination under 15 CFR 930. Thus, the ACMP does not apply to "all activities that occur within a coastal zone," nor does it apply to projects that "may affect coastal resources" but are located outside the coastal zone. A copy of the clarified version of 6 AAC 50.005 recently approved by the Alaska CPC is provided for the record as Attachment A -- below.

The CPC's clarifying revisions to the ACMP regulations are clear that renewals, such as the present proposed action, are exempt from ACMP review. A copy of the CPC's revised 6 AAC 50.720 is provided for the record as Attachment B -- below.

Section 3.27.2 concludes by stating that the TAPS operations and maintenance "have been found to be consistent with" the North Slope Borough and Valdez Coastal Management Programs. It is certainly true that many operational aspects of TAPS, including the spill prevention, response and control plans, have undergone previous periodic ACMP reviews and have been found to be consistent with the NSB and Valdez CMPs, as well as the applicable state-wide ACMP standards. However, the statement in the DEIS as written could be misinterpreted to imply that the State of Alaska has already found the proposed TAPS renewal to be consistent with the ACMP. The TAPS owners have submitted an application for a consistency review; however, that review is being coordinated with this NEPA process and has not been concluded at this time. This statement should be corrected to state that the applicant has submitted a certification that the proposed action is consistent with the ACMP -- a determination over which the State of Alaska may concur after completing its separate but coordinated processes.

These same comments are equally applicable to the other discussions of the ACMP in the DEIS (e.g., § 4.7.4.7.3 at page 4.7-43; Appendix A, § A.12.2).

****

Attachment A

6 AAC 50.005
AS ADOPTED BY

THE ALASKA COASTAL POLICY COUNCIL,
JULY 2002

6 AAC 50.005. APPLICABILITY OF THE ACMP CONSISTENCY REVIEW PROCESS. (a) A project is subject to the consistency review process described in this chapter when

(1) any activity that is part of the project

(A) requires a state agency authorization identified under 6 AAC 50.750;

(B) is a federal activity;

(C) requires a federal authorization identified under 6 AAC 50.405; or

(D) is described in an Outer Continental Shelf (OCS) exploration or development and production plan; and

(2) the activity is

(A) located within the coastal zone; or

(B) subject to a consistency determination under 15 C.F.R. 930.

(b) Only one consistency review process applies to a project. The consistency review process described in

(1) Article 2 (6 AAC 50.200-.280) applies when a project requires only an authorization from one or more state agencies;

(2) Article 3 (6 AAC 50.305-.395) applies when a project is a federal activity that may also require a state agency authorization; and

(3) Article 4 (6 AAC 50.405-.495) applies when a project requires a federal authorization or is an OCS exploration or development and production plan that may also require a state agency authorization.

(c) The consistency response under 6 AAC 50.305-.395 or 6 AAC 50.405-.495 is the only consistency determination required for a project that is a federal activity or federally regulated activity that may also require a state agency authorization.

(Eff. ___/___/200__, Register ___)
Authority: AS 44.19.145, AS 44.19.161, AS 46.40.096
AS 44.19.160, AS 46.40.040

****

Attachment B
6 AAC 50.820
AS ADOPTED BY
THE ALASKA COASTAL POLICY COUNCIL
JULY 2002

6 AAC 50.820. AUTHORIZATION RENEWALS, RE-ISSUANCES, AND EXPIRATIONS. (a) When an authorization for an existing project is subject to renewal, re-issuance, or the authorization has expired and the applicant does not propose a modification to the project, no further action under this chapter is necessary.

(b) When an authorization for an existing project is subject to renewal, re-issuance, or the authorization has expired and the applicant proposes a modification to the existing project, the proposed modification shall be subject to the provisions of 6 AAC 50.810. (Eff. ___/___/200__, Register ___)

Authority: AS 46.40.040, AS 46.40.096

Under the topic "Threatened and Endangered Species" it is stated in Table 4.7-12 that the proposed alternative's "[i]mpacts to threatened, endangered, and protected species are anticipated to be negligible to minor and should not threaten population viability." This statement is not an accurate summary of the more specific data and conclusions presented in Tables 4.7-9, 4.7-10 and 4.7-11 on pages 4.7-103 through 4.7-105. In the latter tables, the cumulative impacts of the proposed action are shown to be "none" or "negligible." No impacts from the proposed alternative were found to be of the "minor" magnitude with respect to threatened, endangered, or protected species.

In addition, please see the comments below regarding § 5.5, which details the results of the BLM's consultations with the National Marine Fisheries Service ("NMFS") and the U.S. Fish & Wildlife Service ("FWS") under § 7 of the Endangered Species Act ("ESA"). As detailed there, the two Services have concurred in the BLM's conclusion that the proposed alternative is not likely to adversely affect ESA listed species or ESA designated critical habitat.

This section of the DEIS identifies certain "agency consultations" conducted in conjunction with the NEPA process. One of the identified consultations discussed is the BLM's § 7 ESA consultations with NMFS and FWS. This discussion in the DEIS should be updated in the FEIS to describe the now-completed process and results, which are identified below. In addition, this section should identify and discuss the current consultation process by the BLM under § 305(b) of the Magnuson-Stevens Act regarding essential fish habitat ("EFH"). The status of the BLM's EFH consultation is also commented on below.

-- ESA Consultation

Section 7 of the ESA requires federal agencies, including BLM, to ensure that their actions avoid jeopardizing listed species or adversely modifying designated critical habitat. In accordance with these requirements, BLM formulated a biological evaluation ("BE") analyzing the effects of the ROW renewal on listed species occurring within the action area. On May 7, 2002, BLM submitted the BE to NMFS and to the FWS, thus initiating consultation with the Services. On June 18, 2002, FWS issued a letter concurring that the proposed action is not likely to adversely affect listed species under its jurisdiction. On July 1, 2002, NMFS likewise issued a letter concurring with the findings contained in the BE that the proposed action is not likely to adversely affect listed species or designated critical habitat under its jurisdiction. Copies of the BE and associated concurrence letters are attached for inclusion in the record as Appendix A.

As the enclosed BE indicates, BLM concluded that the proposed action is not likely to adversely affect either the spectacled eider, Steller's eider, humpback whale, fin whale, or Steller sea lion. Because no critical habitat for these species exists within the action area, BLM also concluded that the proposed action is not likely to adversely affect critical habitat. Among other evidence, these conclusions are supported by the fact that TAPS has not had direct, indirect, or cumulative adverse affects on these species during its 25 years of operation.

-- EFH Consultation

Section 305(b) of the Magnuson-Stevens Act requires federal agencies, including BLM, to consult with NMFS if their actions may adversely affect designated essential fish habitat. During an EFH consultation, NMFS may recommend conservation measures that minimize the effects of the proposed action on EFH. In the present case, BLM has prepared an EFH assessment, and has determined that ROW renewal may result in short-term adverse effects to EFH under certain circumstances. Consequently, BLM is presently engaging in EFH consultation with NMFS to ensure its proposed action adequately minimizes the potential effects of ROW renewal and associated pipeline operations on designated freshwater and marine EFH. A copy of the EFH assessment is attached for inclusion in the record as Appendix B.

As discussed in the enclosed EFH assessment, in freshwater areas, adverse effects may result from existing facilities (e.g., disturbance of runoff patterns); normal operations (e.g., water withdrawals or discharges); routine maintenance (e.g., road maintenance); and repair activities (e.g., ground-disturbing activities). In addition, river and low-water crossings involve potential disturbance of EFH through channel alteration, water quality changes, blockage to migration, and sediment runoff, which can affect both physical EFH habitat and salmon or their prey. In estuarine or marine

areas, EFH may be affected by surface runoff from facilities and permitted discharges.

Based on past operations of TAPS, accidental oil spills are anticipated or likely to occur in freshwater, estuarine, or marine waters where EFH is present. Most of the effects of these spills are expected to be short-lived, with anticipated recovery following cleanup. Further, oil spill modeling results and historical operations indicate that the magnitude of predicted spill events into marine and fresh waters will be such that no significant adverse effects will occur.

Best management practices, regulatory compliance, surveillance, and specific plans (e.g., oil spill prevention, erosion, and sedimentation) have been established to avoid, minimize, and mitigate potential adverse effects of the continued operation of TAPS on EFH. Pipeline operations have also incorporated design features (e.g., shut-off valves) and monitoring systems to detect problems that might occur. In addition, there is extensive Federal and State oversight (e.g., oversight through the JPO) and enforcement of the statutes and regulations governing the ROW. With these measures, it is anticipated that any potential adverse effects of TAPS and the associated ROW on designated EFH would be short-term in duration, and would not be significant in nature.

In summary, based on the past experience with TAPS, as well as available modeling and other information, BLM has determined that the proposed action may result in short-term adverse effects on designated EFH. However, these effects are expected to be adequately minimized and mitigated by existing conservation measures associated with the proposed action. In accordance with applicable EFH regulations, BLM has requested that NMFS engage in abbreviated EFH consultation, and confirm that existing mitigation and minimization measures adequately protect designated EFH.

-- NHPA Consultation

This section currently contains a brief discussion of NHPA consultation processes engaged in by BLM. The FEIS should more explicitly link the tribal consultations that have occurred to the satisfaction of all NHPA consultation requirements. See DEIS pp. 3.26-7 and 4.3-91.

00098347

Appendix A at A-19 makes reference to § 7 ESA consultation by the BLM. This discussion should be updated as commented on above to reflect NMFS' and FWS' concurrence in the BLM's conclusion that the proposed alternative is not likely to adversely affect threatened or endangered species or designated critical habitat.

In addition, although Appendix A refers to analysis of EFH (page A-16), there is no mention of BLM's consultation with NMFS under § 305(b) of the Magnuson-Stevens Act. This subject should be addressed as commented on above to reflect that BLM is engaging in EFH consultation with NMFS and to incorporate into the record the EFH assessment BLM has prepared.

The record on ACMA should be corrected as discussed on our comment for Section 3.27.02. That comment is repeated below:

Section 3.27.2 Comment: The referenced section and pages discuss the Alaska Coastal Management Program ("ACMP"); however, the discussion contains some inaccuracies:

This section states that the Alaska Coastal Management Act ("ACMA") was last amended in 1994; however, the Alaska Legislature last amended the ACMA during its most recent 2002 legislative session.

This section mischaracterizes the scope of the ACMP as encompassing "all activities that occur within a coastal zone or that may affect coastal resources." The applicability and scope of the ACMP has recently been clarified in regulations approved by the Alaska Coastal Policy Council. Although these regulations are not yet effective, they are intended to restate existing law. As indicated in what will shortly become a revised version of 6 AAC 50.005, the ACMP is only applicable to (i) projects that require one or more of a specific list of state permits, (ii) federal activities, or (iii) projects that require one or more of a specified list of federal permits, AND then only if the project also is either (i) located in the designated state coastal zone, or (ii) is subject to a federal consistency determination under 15 CFR 930. Thus, the ACMP does not apply to "all activities that occur within a coastal zone," nor does it apply to projects that "may affect coastal resources" but are located outside the coastal zone. A copy of the clarified version of 6 AAC 50.005 recently approved by the Alaska CPC is provided for the record as Attachment A -- below.

The CPC's clarifying revisions to the ACMP regulations are clear that renewals, such as the present proposed action, are exempt from ACMP review. A copy of the CPC's revised 6 AAC 50.720 is provided for the record as Attachment B -- below.

Section 3.27.2 concludes by stating that the TAPS operations and maintenance "have been found to be consistent with" the North Slope Borough and Valdez Coastal Management Programs. It is certainly true that many operational aspects of TAPS, including the spill prevention, response and control plans, have undergone previous periodic ACMP reviews and have been found to be consistent with the NSB and Valdez CMPs, as well as the applicable state-wide ACMP standards. However, the statement in the DEIS as written could be misinterpreted to imply that the State of Alaska has already found the proposed TAPS renewal to be consistent with the ACMP. The TAPS owners have submitted an application for a consistency review; however, that review is being coordinated with this NEPA process and has not been concluded at this time. This statement should be corrected to state that the applicant has submitted a certification that the proposed action is consistent with the ACMP -- a determination over which the State of Alaska may concur after completing its separate but coordinated processes.

These same comments are equally applicable to the other discussions of the ACMP in the DEIS (e.g., § 4.7.4.7.3 at page 4.7-43; Appendix A, § A.12.2).

****

Attachment A

6 AAC 50.005
AS ADOPTED BY

THE ALASKA COASTAL POLICY COUNCIL,
JULY 2002

6 AAC 50.005. APPLICABILITY OF THE ACMP CONSISTENCY REVIEW PROCESS. (a) A project is subject to the consistency review process described in this chapter when

(1) any activity that is part of the project

(A) requires a state agency authorization identified under 6 AAC 50.750;

(B) is a federal activity;

(C) requires a federal authorization identified under 6 AAC 50.405; or

(D) is described in an Outer Continental Shelf (OCS) exploration or development and production plan; and

(2) the activity is

(A) located within the coastal zone; or

(B) subject to a consistency determination under 15 C.F.R. 930.

(b) Only one consistency review process applies to a project. The consistency review process described in

(1) Article 2 (6 AAC 50.200-.280) applies when a project requires only an authorization from one or more state agencies;

(2) Article 3 (6 AAC 50.305-.395) applies when a project is a federal activity that may also require a state agency authorization; and

(3) Article 4 (6 AAC 50.405-.495) applies when a project requires a federal authorization or is an OCS exploration or development and production plan that may also require a state agency authorization.

(c) The consistency response under 6 AAC 50.305-.395 or 6 AAC 50.405-.495 is the only consistency determination required for a project that is a federal activity or federally regulated activity that may also require a state agency authorization.

(Eff. ___/___/200__, Register ___)
Authority: AS 44.19.145, AS 44.19.161, AS 46.40.096
AS 44.19.160, AS 46.40.040

****

Attachment B
6 AAC 50.820
AS ADOPTED BY
THE ALASKA COASTAL POLICY COUNCIL
JULY 2002

6 AAC 50.820. AUTHORIZATION RENEWALS, RE-ISSUANCES, AND EXPIRATIONS. (a) When an authorization for an existing project is subject to renewal, re-issuance, or the authorization has expired and the applicant does not propose a modification to the project, no further action under this chapter is necessary.

(b) When an authorization for an existing project is subject to renewal, re-issuance, or the authorization has expired and the applicant proposes a modification to the existing project, the proposed modification shall be subject to the provisions of 6 AAC 50.810. (Eff. ___/___/200__, Register ___)

Authority: AS 46.40.040, AS 46.40.096

Comments provided on Appendix E -- ANILCA Section 810 Analysis of Subsistence Impacts, apply here as well. They are:

Appendix E Comment: Appendix E provides the BLM's proposed § 810 ANILCA analysis of subsistence impacts. The proposed analysis finds on page E-5 that "impacts of the proposed action on subsistence would not reach the threshold of 'may significantly restrict' subsistence uses." However, the proposed analysis also finds on page E-10 that "[c]umulative impacts associated with the proposed action on subsistence meets the threshold of "may significantly restrict" subsistence uses. As discussed below: (1) the finding that cumulative impacts "may significantly restrict" subsistence uses is unwarranted and attributable in large measure to misapplication of the term "cumulative impacts;" and alternatively, (2) the record fully supports a determination by the BLM that the criteria specified in ANILCA § 810(a)(3)(A), (B) and (C) are met.

1. The proposed cumulative impacts finding is unwarranted.

Notwithstanding the lesser threshold embodied in § 810 of ANILCA*, the reasonably foreseeable cumulative impacts of the proposed action do not support a finding that the proposed project "may significantly restrict" subsistence access. In large measure, the flaws in BLM's analysis flow from application of incorrect legal standards in the analysis of cumulative impacts in the DEIS.
NEPA requires not only analysis of the potential effects associated with the proposed action and alternatives, but also consideration of other activities that may affect the area of potential impact that have occurred, are occurring, and will occur. See, e.g., 40 C.F.R. §§ 1508.7 and 1508.25(a)(2). Future activities that need be considered are not all that may occur -- only "reasonably foreseeable" activities need be addressed. See, e.g., 40 C.F.R.. §§ 1508.7 and 1508.8. As the DEIS properly recognizes, "reasonably foreseeable" activities (i) are those with "firm near-term plans," such as "[p]roposals for which NEPA documents are in preparation or finalized," "[p]roposals in a detailed design phase," "[p]roposals listed in formal Notices of Intent published in the Federal Register or state publications," "[p]roposals that are funded," "[p]roposals for which enabling legislation has been passed," and "[p]roposals that have been submitted to federal and state regulators to begin the permitting process," and (ii) do not include "uncertain or speculative actions." See, e.g., DEIS at p. 4.7-13 (emphasis added). Those conclusions square with controlling case law. See, e.g., Kleppe v. Sierra Club, 427 U.S. 390, n.20 (1976) (rejecting argument that NEPA requires "a comprehensive impact statement covering contemplated projects in the region as well as those that have already been proposed," as the term "proposed" is construed under NEPA) (emphasis added); Presidio Golf Club v. National Park Service, 155 F.3d 1153, 1163 (9th Cir. 1998) ("Agencies must consider only those indirect effects that are 'reasonably foreseeable.' They need not consider potential effects that are highly speculative or indefinite.").

Although the DEIS recognizes these settled limitations, the analysis of cumulative effects it employs is inconsistent with them. For instance, the DEIS considers the cumulative effects arising from oil and gas activities in over two dozen undeveloped areas that in all cases do not satisfy the limitations identified above. Compare, for instance, Tables 4.7-2 and 4.7-3, as well as "human habitation and development" in northern and central Alaska projected to occur over the next 30 years. See also p. 4.7-36 ("This DEIS assumes that it is reasonably foreseeable that sometime in the next thirty years natural gas will be transported from the North Slope to market in Canada and the United States") (emphasis added). Moreover, the analysis should

recognize that, through processes such as Resource Management Plans and actions taken by Congress, TAPS ROW uses have priority and ROW lands will not be granted for other purposes, the paradigm case where cumulative effects must be

considered. See, e.g., Council On Environmental Quality's Considering Cumulative Effects Under The National Environmental Policy Act at p. 19 ("To include all proposals ever considered as other actions would most likely overestimate the future effects of cumulative effects on the resources, ecosystems, and human communities; therefore, the analysts should develop guidelines as to what constitutes 'reasonably foreseeable future actions' based on the planning process within each agency") (emphasis added). The result is a cumulative effects analysis that overstates cumulative impacts associated with the proposed action and alternatives, such as those addressing subsistence. See, e.g., pp. E-8, E-10, E-12, and E-13.

A second important flaw in the analysis flows from BLM's community subsistence analysis. Based on 25 years of on-the-ground experience (including observed subsistence impacts and a five-fold increase in caribou population), the results of studies, and other factors, the DEIS concludes that the potential effects on subsistence uses are minimal and localized. See, e.g., pp. ES-3, 4.3-84, 4.3-86, and 4.7-108. The DEIS then addresses what is known and unknown about subsistence uses in over 20 villages. See, e.g., Appendix D. While the latter information is useful, it is not necessary for purposes of the analysis required by NEPA, ANILCA, and other legal requirements. Indeed, in the current ANILCA analysis, community-based subsistence information from limited areas seems to be the single factor that led to a "may significantly restrict" finding. See p. E-10.

IN SUM, THE FEIS SHOULD: (i) ADDRESS THE CUMULATIVE EFFECTS OF THOSE ACTIVITIES THAT ARE TRULY REASONABLY FORESEEABLE, NOT ALL ACTIVITIES THAT MAY OCCUR WITHIN THE NEXT 30 YEARS; AND (ii) SHOULD ANALYZE IN A GENERAL FASHION POTENTIAL EFFECTS ON SUBSISTENCE, REACH CONCLUSIONS BASED ON THAT ANALYSIS, AND STATE CLEARLY THAT COMMUNITY INFORMATION PROVIDES BACKGROUND INFORMATION THAT IS USEFUL BUT NOT CRITICAL TO THE BROADER CONCLUSIONS REACHED. A REASONED CONCLUSION BASED UPON SUCH AN ANALYSIS SHOULD FIND THAT SUBSISTENCE IMPACTS FROM THE PROPOSED ACTION ARE EVEN LESS THAN THOSE IDENTIFIED IN THE DEIS AND DO NOT EVEN MEET THE LESSER "MAY SIGNIFICANTLY RESTRICT" ANILCA STANDARD.

2. Alternatively, the BLM should determine that the ANILCA § 810(a)(3) criteria are met:

ANILCA § 810(a) provides that no "withdrawal, reservation, lease, or other use, occupancy or disposition of the public lands which would significantly restrict subsistence uses shall be effected" until the Federal Agency gives the required notice and holds a hearing in accordance with § 810(a)(1) and (2), and makes the three determinations required by § 810(a)(3)(A), (B) and (C). The BLM's proposed findings in its subsistence evaluation are that all the alternatives (including the no-action alternative) may significantly restrict subsistence uses. As a consequence of this finding (if left unchanged), the BLM should document, in the FEIS, that it undertook the requisite notice and hearing procedures required by ANILCA § 810(a)(1)-(2).

In addition, unless the BLM reconsiders its cumulative impacts findings, it must also make the three determinations required by § 810(a)(3)(A), (B) and (C):

A. that such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands;

B. that 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. that reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

Such determinations are warranted and supported by the record.

As an existing use with a 25-year operational history, TAPS' potential impacts to subsistence resources and uses are well-documented, minimized, and effectively mitigated to the point that adverse impacts attributable to the Preferred Alternative are found to be "extremely small." DEIS at pp. 4.3-84, 4.3-86 and 4.7-108 ("The evaluation of impacts to subsistence under the proposed action concludes that any negative impacts that occurred would be extremely small."). Applicable existing measures and stipulations to pre-empt or mitigate impacts to subsistence resources and uses are detailed in the DEIS in § 4.1, including the general requirements of JPO oversight and its adaptive compliance monitoring system (§ 4.1.1), special buried or elevated pipeline designs for wildlife crossings (§ 4.1.2.10), numerous stipulations mitigating or preempting impacts to biological systems (§ 4.1.3.3 and Table 4.1-2), spill prevention and response requirements (§ 4.1.4), and social, cultural and economic mitigation measures (§ 4.1.5).

These measures, subject to the ongoing adaptive compliance monitoring and mitigation provisions of the Federal Grant, are intended to specifically ensure that subsistence resources and uses are not significantly restricted by the proposed action. Because of the numerous existing restrictions and protections, and their demonstrated effectiveness over the 25-year operational history of TAPS, BLM has found that the Preferred Alternative by itself would not result in significant restrictions of subsistence resources and uses. However, considered together with past, present, and reasonably foreseeable future cumulative effects, the possibility exists that all the activities combined may significantly restrict subsistence uses. This possible restriction on subsistence uses cannot be avoided while accomplishing the purposes and needs identified with respect to TAPS in § 1.1 of this DEIS. Nor can this possible effect be avoided if the BLM were to adopt either the less-than-30-years alternative or the no-action alternative because the cumulative impacts of these alternatives still reach the "may significantly restrict" threshold under ANILCA § 810.

With respect to the amount of public lands involved, the existing nature of TAPS and the functional requirement that TAPS extend the full 800 miles from the North Slope to Valdez, establishes real and certain limitations and requirements. As presently configured, although TAPS extends 800 miles, it encompasses only 16.3 square miles of land (including the privately-owned Valdez Marine Terminal, which is not within the ROW being renewed). See Environmental Report for the Trans-Alaska Pipeline System Right-of-Way Renewal at Table 2.1-1. The typical width of the ROW on federal lands is 54 feet for buried sections and 64 feet for elevated sections. Id. Only 47 percent of the 800-mile ROW is on federal lands. DEIS at p. 3.3-72. Thus, the amount of public lands involved in the Preferred Alternative does represent the minimum necessary to accomplish the needs and purposes of TAPS.

The BLM has considered and balanced all these factors, including, in particular, the existing restrictions, limitations, and mitigation measures applicable to the Preferred Alternative to address subsistence concerns. These measures have provided significant and effective protection for subsistence resources and uses during the 25-year operating history of TAPS. Accordingly, the BLM should determine that the significant restriction that may occur under the Preferred Alternative (or any other of

the alternatives analyzed in the DEIS), when considered together with the cumulative impacts resulting from past, present, and reasonably foreseeable future actions: (A) is necessary, consistent with sound management principles for the use of the public

lands included within this TAPS ROW renewal; (B) will involve the minimal amount of public lands necessary to accomplish the purposes of the Preferred Alternative; and (C) reasonable steps have been and will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

---

* The BLM has made a valuable observation about differing standards for the NEPA and ANILCA § 810 analysis. As stated at page E-8, it is possible to reach a conclusion under NEPA (or other federal or state statutes and regulations that address subsistence) that direct, indirect, and reasonably foreseeable cumulative impacts are not significant for NEPA purposes, while at the same time finding under

00098350

The DEIS states: "While the subsistence harvest of wild food (fish, terrestrial and marine mammals, birds, shellfish) only represents 2% of the fish and game harvested annually in Alaska (ADF&G, 2000a), that harvest contains about 35% of the caloric requirements of the rural population."

Suggested change to make the statement more complete: "The subsistence harvest of wild food (fish, terrestrial and marine mammals, birds, and shellfish) represents 2% of the fish and game harvested annually in Alaska (commercial harvesting accounts for 97% and sportfishing/hunting for 1%), which contains about 35% of the caloric requirements of the rural population (ADF&G, 2000a)."

The statistics in parentheses are presented on a later page (3.24-2), but should also be included here for clarity and perspective.

(Please note: Table for this comment could not be included in this database. For full comment, please see Argonne Document #3351)

This section should be augmented to provide a more complete explanation of State/Federal subsistence issues. Recommend deleting all after the sentence ending with "different parts of the state" on line 16 of paragraph 5 on page 3.24-1 through the end of paragraph 1 on page 3.24-2 and replacing this text with the following.

Suggested Insert:

Part of the complexity associated with subsistence issues in Alaska relates to differences in applicable State and Federal laws in terms of the definition of a subsistence user. Table 1 (State of Alaska, Office of the Governor available electronically at <http://www.gov.state.ak.us/subsistence/>) provides a subsistence management chronology for the years from 1925 to 2002.

Of particular relevance in this chronology, Alaska passed a comprehensive subsistence law in 1978 that required, once sustained yield was ensured, that reasonable subsistence uses be allowed, with a priority if necessary. (This law was modified in 1986 to limit those eligible for subsistence priority to rural residents.) In 1980, Congress passed the Alaska National Interest Lands Conservation Act (ANILCA). Title VIII of ANILCA mandates that the state maintain a subsistence hunting and fishing preference for rural residents or forfeit management of these subsistence uses on public lands. In 1982 the Department of the Interior certified that the state's law was in compliance with ANILCA. However, in 1989 the Alaska Supreme Court found that the rural subsistence preference contained in the 1986 state law violated the clause of the Alaska constitution which reserves fish and wildlife resources for "the common use" of all residents of the state. Thus, the court ruled the state's law unconstitutional (Fall, 1990). The Federal government determined to take over management of fish and game on Federal public lands in 1990, arguing that the state was not in compliance with ANILCA because the rural priority was eliminated. This initiated the era of so-called "dual management" of fish and game in Alaska, with separate administration and regulations applicable to State and Federal public lands. In 1994, the U.S. District Court issued a final ruling that interpreted ANILCA as giving the Federal government broad authority to manage subsistence on Federal public lands and extended jurisdiction to include navigable waters on Federal lands.

Since 1990, the State has not decided how to resolve the subsistence issue. In 2001 Governor Knowles established a Subsistence Summit, which developed a proposed constitutional amendment, accompanying set of regulations, and "drafting comments" (see <http://www.gov.state.ak.us/subsistencesummit/trans_to_gov.html>) designed to resolve the conflict between ANILCA and the state law. To date, the state legislature not agreed that a constitutional amendment is appropriate. A key sticking point involves whether or not a subsistence priority -- already embodied in state law (Alaska Statutes [AS] 16.05.258 Subsistence Use and Allocation of Fish and Game) -- is solely a rural priority or alternatively, whether certain urban residents can also qualify as subsistence users. (Important features of Alaska's present subsistence law are discussed in Section 4.7.8.1.)

Resolution of the rural preference issue has pitted rural against urban Alaskans.* As noted by Governor Knowles in a 2001 address to the Alaska Federation of Natives (AFN):

"For 12 years, the permanent protection of rural subsistence has been denied us. That's because a small minority of urban legislators refuse to allow Alaskans the opportunity to vote on a subsistence amendment to our state constitution.

Five special sessions of the Legislature called by three different governors and 10 years of related court suits have brought us only hardened positions and hardened hearts." (Knowles, 2001.)

It is not possible to predict if or when this contentious issue will be resolved and the state constitution amended to include a rural subsistence priority.

At present, therefore, there are differing definitions (state/federal) of exactly who is a subsistence user. On state lands, all Alaska residents are potentially subsistence users. On Federal public lands and navigable waters, only rural Alaskans are potential subsistence users. To simplify the following discussion, this DEIS uses the current federal definition of subsistence, including its requirement of rural residency.

* Strohmeyer (1993) provides a popularized summary of the early political battles between urban sports hunters/anglers and subsistence users.

References:

Botelho, Attorney General B. M. 2001. "Subsistence Summit Recommendations." Available electronically at <http://www.gov.state.ak.us/subsistencesummit/trans_to_gov.html>.

Fall, J. A. 1990. The division of subsistence of the Alaska Department of Fish and Game: An overview of its research program and findings: 1980 -- 1990. Arctic Anthropology 27(2):68-92.

Knowles, Gov. T. 2001. Alaska Federation of Natives Annual Convention. Egan Convention Center, October 25, 2001. Available electronically at <http://www.gov.state.ak.us/speech/01_AFN.html>.

State of Alaska. 2001. Joint Resolution No. in the Legislature of the State of Alaska Twenty-Second Legislature -- Second Session.

Strohmeyer, J. 1993. Extreme Conditions: Big Oil and the Transformation of Alaska. Simon & Schuster, New York, NY.

(Please note: Figures for this comment could not be included in the database. For full comment, please see Argonne Document #3352)

The DEIS should provide a useful overview of sportfishing and hunting in Alaska. In several places where subsistence is discussed (and potential conflicts between subsistence and other uses of fish and game), the DEIS claims that there are critical data deficiencies. Undoubtedly, the subsistence database could be improved -- a useful observation -- but the DEIS should make better use of extant data. The following material should be inserted to describe sportfishing and hunting in Alaska. We recommend that this be inserted after the sentence ending in line 4 as an additional series of paragraphs.

Suggested Insert:

This section provides a brief overview of sport fishing and hunting in Alaska including the economic importance of these activities and relevant trends in participation and usage. Managed properly and with due regard for potential conflicts and legislatively mandated priorities among various user groups, (See footnote 1 below) the fish and game resources of Alaska are both abundant (although not sufficient to accommodate all user groups at all times) and renewable -- that is they provide a continuing economic benefit.

In aggregate the sport harvest of fish and game is equal to between one-third and one-half (by weight) of the subsistence harvest of these resources (Subsistence Myths, 2002; Larson, 1999). Additionally, Alaska's wildlife resources are exploited for wildlife viewing, a nonconsumptive use that is increasingly important economically.

Fishing and hunting are popular pastimes for Americans. Nationwide, 16% of the population aged 16 or older went fishing and 6% went hunting in 2001 (USFWS, 2002c). Participation rates are even higher in Alaska; 41% of Alaskans fished (the highest in the nation) and 16% hunted (USFWS, 2002c). Fish and game resources provide an attractive draw for nonresidents; according to preliminary data from the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation -- State Overview (USFWS, 2002c), nonresidents accounted for 57% of the anglers in Alaska, the highest percentage of any state in the nation.

-Sport Fishing

Sport fishing is economically important to Alaska (see footnote 2 below). Annually, nearly 450,000 anglers (resident and nonresident) generate economic activity resulting from their expenditures for licenses and fees, fishing and camping gear, food, lodging, transportation, and guides. Revenues spur business activity, create employment in various sectors of the Alaskan economy, and provide funds for certain government programs. Additionally the number of anglers (among other factors) determines the amount of federally provided sport fish restoration funds (see footnote 3 below). For FY 2002, Alaska received more than $14.3 million in Federal aid for sport fish restoration, more than any other state.

Estimates of the economic significance of the sport fishery in Alaska vary (see e.g., Colt, 2001a,b; Alaska Sport Fish Council, 2002), but all agree it is material. Colt (2001a,b), for example, estimated sport fishing expenditures totaled over $600 million (1993 data converted to $1998 dollars), created over 9,000 Alaskan jobs (direct and indirect), and had a net economic value of $215 million. Another study estimated that

sportfishing expenditures were more than $548 million in 1996, resulting in an economic output of nearly $1 billion and earnings of $261 million with direct and indirect employment totaling 12,626 (Alaska Sport Fish Council, 2002). The

economics of several individual sport fisheries have been analyzed, including Southeastern Alaska and the Central and Lower Cook Inlet (Hamel et al., 2000; Herrmann et al., 2001).

Figure 1 shows a time series of state fishing licenses sold in Alaska since 1961 (Howe et al., 2001) (see footnote 4 below). Total license purchases increased from approximately 56,000 to 442,000 in this period -- a compound average annual growth rate of 5.6%. License sales to resident anglers increased at a compound average annual rate of growth of 6.3% over the years from 1961 to 1980, but the rate of growth decreased to only 1.42% over the period from 1980 to 1999. License sales to nonresidents increased at 9%/year over the period from 1961 to 1980 and decreased only slightly to a rate of nearly 7%/year since 1980.

Figure 2 shows the number of licenses issued to resident anglers in Alaska as a percent of the total (solid line left axis) and relative to the Alaska population (resident licenses per 100 population, dashed line, right axis). Because the rate of increase in the annual number of fishing licenses issued to Alaskan residents tapered off, the percentage issued to residents decreased and became less than 50% of the total in 1990. Nonresidents account for the majority of Alaskan sport anglers. However, because residents use the fishery for a greater number of days per year than do nonresidents, residents still account for a majority of the days fished (Howe et al., 2001) (see footnote 5 below).

Since 1980, the rate of growth of the Alaska population has been higher than the rate of growth of sales of fishing licenses to residents. Therefore, the number of resident licenses per 100 population has decreased. Despite this latter trend, sport fishing remains popular among Alaskan residents -- more popular in percentage terms than for any other state.

The data presented in Fig. 1 and Fig. 2 relate to angler participation (the number of anglers who fished). Another index used to characterize fisheries is the angler effort, typically measured in angler days. (One angler-day is equivalent to one angler fishing for all or a portion of a day.) Figure 3 presents a time series of angler effort from 1977 to 2000. (The post-1995 dip is probably a statistical artifact resulting from a change in the estimation procedure.) According to the most recent (and what are believed to be the most reliable) estimates, residents and nonresidents expended an effort of slightly more than 2.6 million angler-days in the year 2000.

Participation and effort vary with location throughout Alaska. Relevant estimates for the Alaska North Slope and the TAPS right-of-way (ROW) are summarized in a later section.

-Sport Hunting/Trapping

Sport hunting is also economically important to Alaska. As with anglers, hunters and trappers (resident and nonresident) generate economic activity by their expenditures for licenses and fees, gear, food, lodging, transportation, and guides. These expenditures spur business activity, create employment, and provide funds for certain government programs. Colt (2001a) estimates that 1999 sport hunting expenditures totaled approximately $165 million and created nearly 3,000 jobs in Alaska. These economic benefits are smaller than those for fishing (see above) are, but appreciable nonetheless. Additionally, the number of hunters in a state (together with the total area of the state) determines the amount of Federal Wildlife Restoration

funds provided the state (see footnote 6 below). In FY 2002, these funds provided to Alaska totaled nearly $5.5 million, more than received by any other state.

Figure 4 shows a time series of the number of licenses issued to resident and nonresident hunters and trappers in Alaska from 1961 to 2000. Under Alaska law, all residents of age 16 or older must posses a valid license to hunt or trap. Residents of age 60 or older may apply for a permanent identification card in lieu of a license. Hunting or trapping licenses are required if hunting/trapping on state (ADF&G, 2002c) or Federal land (FSB, 2002b), and whether for sport or subsistence uses (see footnote 7 below). Thus, with the exception of younger (< 16 years of age) and older (age 60 or more) resident hunters, the statistics presented in Fig. 4 include both sport and subsistence hunters. Licenses included in this tabulation include those issued solely for hunting, combination licenses for hunting and fishing, and combination licenses issued for hunting, fishing, and trapping. Both annual and short-term (e.g., 7-, or 14-day licenses) are included as are licenses issued to military, low-income, and military veterans groups. Over the period from 1961 (see footnote 8 below) to 2000, the number of hunting licenses issued increased by a factor of 2.4 from approximately 41,500 to 100,000 (see footnote 9 below) -- a compound average annual growth rate of slightly more than 2.3%. In terms of the number of licensed participants, fewer people (including both residents and nonresidents) hunt than fish (in a ratio of approximately 1:4) in Alaska. In the late 1950s and early 1960s the numbers of fishing and hunting licenses issued in Alaska were approximately the same. However, the subsequent growth rate in fishing license sales has been significantly larger than that for hunting licenses.

Figure 5 shows the relative share of resident and nonresident hunting license sales. Nonresidents accounted for approximately 16% of the hunting licenses issued in the year 2000, slightly smaller than corresponding percentages in the late 1960s, but recently on the increase. Proportionately, there are fewer nonresident hunters and trappers than anglers.

References:

Alaska Department of Fish and Game (ADF&G). 2002a. Ten-year Recap -- Sales Statistics for Licenses, Stamps and Big Game Tags Reported Sold, 1992 -- 2001. Administrative Services, ADF&G. Available electronically at <http://www.state.ak.us/local/akpages/FISH.GAME/admin/license/general/10yrinf.htm>.

Alaska Department of Fish and Game (ADF&G). 2002b. Ten-year Recap -- Sales Statistics for Licenses, Stamps and Big Game Tags Reported Sold, 1980 -- 1991. Administrative Services, ADF&G.

Alaska Department of Fish and Game (ADF&G). 2002c. Alaska Hunting Regulations: Effective Dates July 1, 2002 -- June 30, 2003. Available electronically at <www.state.ak.us/adfg/wildlife/wildmain.htm>.

Alaska Department of Fish and Game (ADF&G). 2001. 2001 Alaska Sport Fishing Regulations Summary, Region III: Arctic-Yukon-=Kuskokwim and Upper Copper/Upper Susitna River Regulation Areas. Available electronically at <www.admin.adfg.state.ak.us/license>.

Alaska Sport Fish Council. 2002. "There are many perceptions associated with sport and commercial fisheries in Alaska. Some correct, some not. Following are some facts which should help clear up those perceptions." Available electronically at <http://www.alaskasportfish.org/questions.html>.

Colt, S. 2001a. The Economic Importance of Healthy Alaska Ecosystems. Institute of Social and Economic Research, University of Anchorage, Anchorage, AK.

Prepared for Alaska Conservation Foundation.

Colt, S. 2001b. What's the economic importance of Alaska's healthy ecosystems? Research Summary. R.S. No. 61. Institute of Social and Economic Research, University of Anchorage, Anchorage, AK.

Federal Subsistence Board (FSB), U.S. Fish and Wildlife Service, Office of Subsistence Management. 2002a. Subsistence Management Regulations for the Harvest of Fish and Shellfish on Federal Public Lands and Waters in Alaska. Anchorage, AK. Available electronically at <http://www.r7.fws.gov/asm/home.html>.

Federal Subsistence Board (FSB), U.S. Fish and Wildlife Service, Office of Subsistence Management. 2002b. Subsistence Management Regulations for the Harvest of Wildlife on Federal Public Lands in Alaska. Anchorage, AK. Available electronically at <http://Alaska.fws.gov/asm/home.html>.

Hamel, C., Herrmann, M., Lee, S. T., and Criddle, K. R. 2000. "An economic discussion of the marine sport fisheries in lower Cook Inlet." Presented before the tenth meeting of the International Institute for Fisheries Economics and Trade, Corvallis, Oregon, July 10 - 24, 2000. Available electronically at <http://www.orst.edu/Dept/IIFET/2000/abstracts/hamel.html>.

Herrmann, M., Lee, S. T., Hamel, C., Criddle, K. R., Geier, H. T., Greenberg, J. A., and Lewis, C. E. 2001. Final Report: An Economic Assessment of the Sport Fisheries for Halibut, and Chinook and Coho Salmon in the Lower and Central Cook Inlet. OCS Study MMS 2000-061.

Howe, A. L., Walker, R. J., Olnes, C., Sundet, K., and Bingham, A. E. 2001. Revised Edition: Harvest, Catch, and Participation in Alaska Sport Fisheries During 1997. Alaska Department of Fish and Game (ADF&G), Fishery Data Series No. 98-25 (Revised).

Larson, E. 1999. Alaska's natural assets: An overview. Research Summary, R.S. No. 60. Institute of Social and Economic Research, University of Alaska, Anchorage, AK.

Mills, M. J. 1989. Alaska Statewide Sport Fisheries Harvest Report 1988. Alaska Department of Fish and Game (ADF&G), Fishery Data Series No. 122.

Subsistence Myths: What Have you Heard? 2002. Available electronically at <www.gov.state.AK.us/subsistence/myths.pdf>.

U.S. Fish & Wildlife Service (USFWS). 2002a. Federal Aid in Sport Fish Restoration (Dingell-Johnson and the Wallop-Breaux Amendment). Available electronically at <http://federalaid.fws.gov/sfr/fasfr.html>.

U.S. Fish & Wildlife Service (USFWS). 2002b. Federal Aid in Wildlife Restoration (Pittman-Robertson). Available electronically at <http://federalaid.fws.gov/wr/fawr.html>.

U.S. Fish & Wildlife Service (USFWS). 2002c. 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, State Overview. Available electronically

at <http://www.fws.gov>.

Walker, R. J. Olnes, C., Sundet, K., Howe, A. L., and Bingham, A. E. (In prep.) Participation, Catch, and Harvest in Alaska Sport Fisheries During 2000. Alaska

Department of Fish and Game (ADF&G), Fishery Data Series. Anchorage, AK.

_____

Footnotes:

1 -- Both Alaska and Federal laws provide for a subsistence priority, discussed in other sections.

2 -- Mention of the economic value of sport fishing or hunting does not imply that the economic value of either subsistence or commercial harvests is unimportant. The economic value of subsistence uses is discussed in Section 3.23.5. Colt (2001a) provides data on the economic value of commercial fishing.

3 -- The number of licensed anglers in the state and the size of its land and water area (among other factors) determine the amount of grant funds provided under the Federal Aid in Sport Fish Restoration Act (Dingell-Johnson and the Wallop-Breaux Amendment). The Sport Fish Restoration program is funded by revenues collected from the manufacturers of fishing rods, reels, creels, lures, flies, and artificial baits, who pay an excise tax on these items to the U.S. Treasury <http://federalaid.fws.gov/sfr/fasfr.html> (USFWS, 2002a). The Wallop-Breaux Amendment established a new Trust Fund, named the Aquatic Resources Trust Fund, which also includes funds from import duties on sport fishing equipment, pleasure boats and yachts, and tax on motorboat fuel sales. Funds are provided under a cost-reimbursement program, where the state is reimbursed by up to 75% of project expenses.

4-- Licenses serve as a convenient surrogate for the number of sport anglers. However, the correspondence is not exact because some (particularly out-of-state residents) anglers who purchase licenses do not fish in a given year and certain others (such as residents under the age of 16 or resident seniors) are not required to have a license in order to fish. Licenses are not required for subsistence fishing on state (ADF&G, 2001) or Federal waters (FSB, 2002a). Permits may be required for certain subsistence fishing (see 5AAC 01.015).

5 -- In 1997, for example, Alaska residents accounted for 63.3% of the days fished in Alaska, even though they accounted for fewer than 50% of the anglers (Howe et al., 2001).

6 -- These funds are provided from an 11% Federal excise tax on sporting arms, ammunition, and archery equipment, and a 10% tax on handguns and allocated under a formula specified in the Federal Aid in Wildlife Restoration Act, popularly known as the Pittman-Robertson Act <http://wwwfederalaid.fws.gov/wr/fawr.html> (USFWS, 2002b).

7 -- This differs from license requirements for subsistence fishing, where licenses are not required

Suggest that these two paragraphs be reviewed carefully for accuracy. Much of this material seems to be abstracted from Haynes (2000). Specifically, lines 19 -- 22 of the 2nd paragraph contain the statement: "The main problem is the combination of subsistence and recreational harvest data, making it impossible to distinguish between the two." Haynes (2000) page 5 point 3 lines 1 and 2 actually states: "The wildlife harvest and fur sealing data represent statistics for both subsistence and non-subsistence harvests." There is no implication from this or other statements that fishing harvest data for sport and subsistence uses is commingled. Thus, in principle, it is possible to distinguish between these two, although not wildlife.

Here and at several other points in the text the DEIS comments on subsistence data deficiencies. The DEIS should recommend that the state and federal subsistence data collection effort be designed more efficiently and expanded if necessary. In aggregate, substantial resources are available to design and implement a functional subsistence data collection and analysis effort.

Reference:

Haynes, T. L. 2000. TAPS Right-of-Way Lease Renewal Project, Alaska Department of Fish and Game Division of Subsistence Work Order #1: Subsistence Information for Alyeska Pipeline Service Company Environmental Report. Alaska Department of Fish and Game (ADF&G), Fairbanks, AK.

(Please note: Figures for this comment could not be included in the database. For full comment, please see Argonne Document #3353)

The discussion regarding Fig. 3.24-3 is confusing. It needs to be clarified, and the figure itself should be redrawn and simplified to avoid confusion. The following text is suggested:

First, it is helpful to subdivide Fig. 3.24-3 into two plots, one showing the relationship between angler effort (000 angler-days) (see footnote 1 below) and time. A semi-log plot as illustrated in Fig. 1 makes it easier to see proportional trends (rates of growth or decline). Figure 1 presents a time trend of angler effort in the vicinity of the Dalton Highway in the North Slope subarea of the Arctic-Yukon-Kuskokwim (AYK) fishery management area over the years from 1984 to 1999 based upon the most recent annual fishery management report (Burr, 2001). There is substantial year-to-year variability (see footnote 2 below) in effort and the least squares estimate of the compound average annual rate of growth was approximately 5.8% per year over this period [R2 = 0.36 (see footnote 3 below)]. This apparent increase in sportfishing effort along the Dalton Highway might have been a return to an equilibrium demand following the reopening of the fishery in 1981 and/or the effect of increased access and larger numbers of anglers statewide. If attention is limited to the period from 1987 to 1999, the estimated annual rate of increase is lower (3.9% per year) and the time trend is not statistically significant.

Second, it removes clutter and facilitates understanding if the harvest data for this area are aggregated for all three species of fish harvested (lake trout, char, and Arctic char). Harvest data represent fish caught and kept (consumed). It is also useful to include available data on catch (fish caught, but not necessarily consumed) as well as harvest (see footnote 4 below). Some sport anglers (either by choice or regulation) engage in catch-and-release fishing. Burr (2001) and Haynes (2000) provide a time series of the catch of each of these species for the period from 1990 to 1999. (Earlier catch data are not available.) Figure 2 shows a semi-logarithmic chart of available data for both catch and harvest over this time period (total of all three species). As with the participation data for this area, there is substantial year-to-year variability, which reflects variation in (among other things) effort, abundance, and luck or skill. There is no statistically significant trend in total catch. However, the total harvest appears to have decreased (4.6% per year least square estimate, R2 = 0.22) over these years.

Considered together, the data on angler effort, success, and harvest do not indicate substantially increasing competition from sport anglers in this area over this period (see footnote 5 below). Moreover, state and federal regulatory authorities have the legislative authority and regulatory tools (see material presented elsewhere in these comments) to limit or prevent any competition from sport anglers that would reduce the harvest of subsistence users. In the past, they have exercised this authority. The DEIS is right to summarize the views and concerns of subsistence users. However, available data should be presented to quantify these potential impacts wherever possible.

Data are also available on participation, effort, success, and harvest for the entire North Slope subarea, which are also relevant (particularly for assessment of cumulative effects). These data, taken from Burr (2001) are plotted in Fig. 3 and Fig. 4 and are more useful than the data shown in Fig. 3.24-4 of the DEIS. Analysis of these data indicates that there is no statistically significant increase in either participation

(000 anglers) (see footnote 6 below) or effort (000 angler-days) over this same time period (see Fig. 3). There is no statistically significant trend in catch (000 fish) over the years from 1990 to 1999. Harvest data indicate a weak declining trend (compound

annual rate of -5.1% per year, R2 = 0.27) for the years from 1985 to 1999.

References:

Burr, J. 2001. Fishery Management Report for Sport Fisheries in the Arctic-Yukon-Kuskokwim Management Area, 1999-2000. Alaska Department of Fish and Game (ADF&G), Fishery Management Report No. 01-3.

Haynes, T. L. 2000. TAPS Right-of-Way Lease Renewal Project, Alaska Department of Fish and Game Division of Subsistence Work Order #1: Subsistence Information for Alyeska Pipeline Service Company Environmental Report. Alaska Department of Fish and Game (ADF&G), Fairbanks, AK.

_____

Footnotes:

1 -- Angler effort is usually measured in angler-days. One angler-day is equivalent to one angler fishing for all or a part of a day.

2 -- This could reflect actual time trends in effort, but also reflects year-to-year survey sampling error.

3 -- The R2 value is a measure of the variability of the dependent variable that is "explained" by variation in the independent variable(s). In this case 36% of the variability in angler effort is accounted for by the time trend -- a relatively low percentage.

4 -- The number of fish harvested is always less than or at most equal to the number of fish caught.

The discussion of these possible subsistence impacts in the DEIS identifies possibilities, but provides little logical or data-based analysis. Are these concerns supported by data? Can these impacts be mitigated? What is the relative likelihood or significance of these impacts? This section needs to be revised and clarified.

Consider the first bullet point, for example -- indicating that increased access by nonlocals using TAPS maintenance roads or employed at TAPS facilities might compete for or disrupt subsistence activities. This is certainly a concern in principle. However:

-- The DEIS also notes that after September 11, 2002, new access constraints have been put in place, which would reduce access to the TAPS right-of-way (ROW). Access to the Dalton Highway remains.

-- Data presented in the DEIS in Table 4.3-9 projects that total employment in mining (including gas and oil) throughout the state will increase only slightly from 10,381 persons in 2004 to 11,505 in 2034. In the Environmental Report (TAPS Owners, 2001, Table 4.3-17) pipeline employment is projected to decrease slightly from 2,638 persons in the year 2000 to 1,816 in 2015 and employment in North Slope oil field operations to increase only slightly from 5,823 persons in the year 2000 to 6,356 in 2015. In fact, employment at TAPS might actually be lower than projected as a result of rampdown of pump stations and other system changes.

-- Historically, the majority of hunters using the Dalton Highway to access hunting areas are from the Fairbanks/northern interior area and a substantial proportion of those hunters are on active military duty. A recent study notes that more than half of all hunters (53%) in 1998 reported home addresses in the Fairbanks/northern interior area with 17% from the "lower 48" and the remaining proportion from other portions of the state (Hicks, 1998). Of those hunters using the Dalton Highway, approximately 25 percent were on active duty (Smith, 1999). Smith (1999) also notes that because the figure does not include family members or visiting friends or relatives, the military community is a significant presence among hunters using the Dalton Highway to access hunting areas.

Given this information, it is hard to imagine that competition with subsistence fishing is likely to be a material effect. Likewise, the third bullet point on recreational hunting and fishing can be placed in perspective by referring to the angler and hunter data given elsewhere in these comments (see comment and data presentation for page 3.34-31).

This section does not address measures that can be taken by regulatory authorities to limit sportfishing (see detailed information presented elsewhere in these comments) in the event that the subsistence fishery suffers adverse impacts. State and federal agencies have the authority and the regulatory tools to control sport angler effort, technology employed, catch, and harvest by location and species. Thus, any adverse impact from competitive fishing pressure (by sports anglers) can readily be mitigated. The same is true for hunting pressure.
This entire section should be rewritten for greater clarity. Claims that we lack information or data notwithstanding, it is possible to project the effects of the proposed action alternative because this involves the continuation of an existing facility.

References:

Hicks, M. V. editor. 1998. Moose. Federal Aid in Wildlife Restoration Management Report: Survey-Inventory Activities 1 July 1995 -- 30 June 1997. Grants W-24-4 and W-24-5, Study 1.0. Alaska Department of Fish and Game (ADF&G), Division of

Wildlife Conservation, Juneau, Alaska.

This section should be augmented to provide a more complete explanation of State/Federal subsistence issues. Suggested language follows:

Federal Subsistence Management

The Federal government has managed subsistence trapping, hunting, and fishing on Federal public lands and waters since July 1, 1990. On October 1, 1999, the Secretaries of the Interior and Agriculture published regulations (36 Code of Federal Regulations (CFR) Part 242 and 50 CFR Part 100) to expand Federal management of subsistence fisheries to Alaskan rivers and lakes and limited marine waters within and adjacent to Federal public lands. The expanded jurisdiction resulted from a decision by the Ninth Circuit Court in the Katie John case and meets the requirements of the rural subsistence priority in Title VIII of ANILCA. As noted in Section 3.24 of this DEIS, the assumption of Federal management was made necessary by the failure of the state law to comply with ANILCA.

Federal subsistence fishing and hunting regulations are published annually (see, e.g., Federal Subsistence Board (FSB), 2002a,b).

The FSB oversees the Federal Subsistence Management Program for both fish and game. The Federal Subsistence Management Program manages subsistence use by rural Alaskans on 237 million acres of federal lands, which encompass 66 percent of Alaska lands and 52 percent of Alaska's rivers and lakes (U.S. Fish and Wildlife Service, 2002). In the context of cumulative effects associated with the renewal of TAPS, it should be noted that Federal lands on the North Slope include the National Petroleum Reserve-Alaska and the Arctic National Wildlife Refuge.

The FSB includes the Alaska directors of the U.S. Department of Interior's Fish and Wildlife Service, National Park Service, Bureau of Land Management, Bureau of Indian Affairs, and the U.S. Department of Agriculture's Forest Service. The Chair of the FSB is a representative of the Secretary of the Interior with the concurrence of the Secretary of Agriculture (67 Federal Register 120, pp 42185-42187). As with the state BOF and BOG, Federal Subsistence Regional Advisory Councils provide input to the FSB, one from each of the ten Federal subsistence resource regions. (These regions are described and mapped in Federal Subsistence Board (2002a,b).) Members of these Regional Advisory Councils are appointed by the Secretaries of the Interior and Agriculture. Members were first appointed in 1993; initial appointments were for staggered terms of 1, 2, or 3 years. Subsequent appointments were for 3 years each. Requirements for membership include residence in the region and knowledge of regional subsistence uses and needs. Federal Subsistence Regional Coordinators are appointed to work with the Regional Subsistence Advisory Councils and the FSB.

Cooperative agreements have been developed between the Federal government and several Alaska Native organizations to manage some subsistence resources more effectively (see <http://www.r7.fws.gov/asm/brochur.html>). These advisory organizations provide technical information and biological data to the FSB. Traditional and local knowledge is weighed in subsistence management decisions.

Any individual or group can submit proposals to change Federal subsistence regulations, comment on proposals, and testify at meetings. The regulatory planning schedule and forms to describe specific proposals are widely published (see e.g., Federal Subsistence Board, 2002a,b). Meetings of the FSB and its Regional Advisory

Councils are open to the public and meeting transcripts are published (electronic versions are available at <http://www.r7.fws.gov/asm/board02.html>).

Just as the State BOF or BOG may issue emergency orders, the FSB also issues emergency restrictions in time-critical situations, as happened recently when the FSB issued emergency restrictions to conserve Chinook and summer chum salmon in the Yukon River drainage (Federal Subsistence Board, 2000). In the past, the FSB has determined that additional public notice and comment requirements under the Administrative Procedure Act (APA) for emergency closures are impracticable, unnecessary, and contrary to the public interest because lack of appropriate and immediate conservation measures could seriously affect the continued viability of fish or game populations (67 Federal Register 120, pp 42185-42187).

Some, including Alaska's Lieutenant Governor Fran Ulmer have argued that so-called "dual management" of Alaska's fish and game resources is inefficient. In a speech before Commonwealth North, the Lieutenant Governor identified some of the problems of dual management as (Ulmer, 2002):

"Complicated and potentially conflicting regulations.
Immediate changes in commercial and sport fisheries access and allocations.
A heightened risk of over-harvesting from separate allocation decisions.
Slower and more cumbersome emergency regulatory procedures.
And associated higher public costs from duplication of effort."

However, the FSB and Federal officials generally have worked to facilitate dual management of fish and game resources in Alaska. As noted by Mitch Demientieff, Chair of the FSB in testimony before the Senate Committee on Indian Affairs (Demientieff, 2002):

"Dual management between the Alaska Department of Fish and Game and the Federal Subsistence Program is currently being guided through an Interim Memorandum of Agreement (MOA). This document provides a foundation and direction for coordinated interagency subsistence fisheries and wildlife management consistent with state and federal statutes. More specifically, it is intended to protect and promote the sustained health of fish and wildlife populations, to ensure conservation and stability in fisheries and wildlife management, and to include meaningful public involvement.

Through the implementation of the MOA, the federal agencies have worked with the State of Alaska to develop specific protocols that provide detailed guidance to the field managers for various aspects of dual management…These protocols address information sharing between the agencies, coordinated research projects and monitoring activities, and coordinated in-season management decision making.

Full-time federal and state liaison positions have also been established to facilitate this cooperative effort. Federal funding to support the State's liaison and coordination efforts is provided through cooperative agreements on an annual basis. This year's agreement provides $470,000 to the Alaska Department of Fish and Game for this purpose."

In practice, both the State and Federal governments have attempted to minimize potential problems associated with dual management. In most cases they have worked in unison; an assertion supported by experience. For example (USFWS, 2000), during the early 1900s moose were rare on the Alaskan North Slope. Moose gradually increased and peaked in the late 1980s. Later counts declined. in 1995 the State of Alaska Board of Game and Federal Subsistence Board issued regulations

closing nearly all of the Alaskan North Slope to moose hunting (a small harvest of moose was authorized for subsistence in the vicinity of Nuiqsut). Hypotheses advanced to explain the decline in moose populations in this area included the

possibility that moose populations exceeded the maximum level sustainable by the habitat, an increase in predator populations resulting from bear harvest restrictions established in the early 1970s and reduced aerial hunting of wolves, and increases in human harvest as the regional became more accessible resulting from the completion of the Dalton Highway USFWS, 2000). Whatever the cause, the BOG and the FSB were able to take coordinated action to try to correct the situation.

In addition to its internal research programs, the Federal government funds a variety of organizations to collect and analyze data about subsistence harvests and the status and trends of the various wildlife and fish populations in Alaska. In the past two years, $14 million has been expended to fund 119 fisheries monitoring studies (Demientieff, 2002). To date, the State of Alaska have received $5.9 million and Alaska Native and local rural organizations have received $5.3 million to perform these studies (Demientieff, 2002).

The Federal subsistence regulations apply to subsistence users only. The Federal regulations do not apply to nonrural residents or non-Alaska residents; these two groups are governed by ADF&G hunting and fishing regulations. Federal regulations do affect sport anglers and hunters, however, because the FSB may open or close Federal lands to various user groups. For example, on July 25, 2002, the FSB reopened sockeye fishing in the Redoubt Lake watershed and part of Redoubt Bay to all users—a decision that rescinded an earlier closing of all Redoubt Lake area freshwaters to nonsubsistence fishing in order to provide for a subsistence priority.

Summary

As the above discussion shows, the administrative mechanisms for fish and game management are well developed and a wide variety of regulatory tools are employed to accord subsistence users priority. Competition for subsistence resources from sport anglers or hunters/trappers can be mitigated or eliminated, although the management system has not always functioned as intended and a bias towards sport and commercial users has been alleged.

From the perspective of assessing the probable effects of renewal of the TAPS ROW it is appropriate to note that renewal alone does not cause increased competition between sport and subsistence users. The number of TAPS and ANS oilfield workers is not projected to increase substantially under the proposed action alternative. The State of Alaska can make the decision to continue to allow public access to the Dalton Highway or return this to a limited access road. And, even if the Dalton Highway were to remain open to the public and competition from urban and nonresident sport hunters and anglers were to threaten to imperil subsistence harvests, the State and Federal governments have the legislative mandate and sufficient regulatory tools to mitigate these adverse impacts. The responsibility for fish and game management lies with State/Federal government, not with the oil industry.

References:

Alaska Department of Fish and Game (ADF&G). 2002. Selective harvest the way Alaskans fish. Available electronically at <http://www.state.ak.us/adfg/sportf/geninfo/selhar/selhar.htm>.

Alaska Department of Fish and Game (ADF&G). 2001. Season Overview for Recreational, Subsistence, Personal Use and Educational Fisheries, 2001. Division of

Sport Fish, Region II.

Alaska Department of Fish and Game (ADF&G), Division of Subsistence. 1991.

Subsistence Management in Alaska: 1991 Update. Juneau, AK.

Alaska Department of Fish and Game (ADF&G), Division of Subsistence. 1990. How Alaska's Subsistence Law Affected Hunting Regulations. Juneau, AK.

Alaska Department of Natural Resources (ADNR), Division of Parks and Outdoor Recreation. 2002. Wood-Tikchik State Park Management Plan. Public review draft.

Arvey, W. D. 1991. Annual Management Report for Sport Fisheries in the Arctic-Yukon-Kuskokwim Region, 1989. Alaska Department of Fish and Game (ADF&G), Fishery Management Report No. 91-3.

Burr, J. 2001. Fishery Management Report for Sport Fisheries in the Arctic-Yukon-Kuskokwim Management Area, 1999-2000. Alaska Department of Fish and Game (ADF&G), Fishery Management Report No. 01-3.

Clark, R. A. 1991. Mortality of Arctic Grayling Captured and Released with Sport Fishing Gear. Alaska Department of Fish and Game (ADF&G), Fishery Data Series No. 91-59.

Clark, J. H., Andersen, F., and Hallberg, J. 1992. Proposals Considered and Changes Made to the Regulatory Structure of the Sport Fishery in the Arctic-Yukon-Kuskokwim Region of Alaska by the Alaska Board of Fisheries at their February 1992 Meeting. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Management Report No. 92-1.

Demientieff, M. 2002. "Statement of Mitch Demientieff, Chair, Federal Subsistence Board before the Senate Committee on Indian Affairs, Oversight Hearing on Subsistence Hunting and Fishing in the State of Alaska."

Fairbanks Chamber of Commerce. 2002. "Resolution 02-0304A: A resolution supporting the development and construction of a hatchery in interior Alaska." Available electronically at <http://www.fairbankschamber.org/res20.html>.

Federal Subsistence Board, U.S. Fish and Wildlife Service, Office of Subsistence Management. 2002a. Subsistence Management Regulations for the Harvest of Fish and Shellfish on Federal Public Lands and Waters in Alaska. Anchorage, AK. Available electronically at <http://www.r7.fws.gov/asm/home.html>.

Federal Subsistence Board, U.S. Fish and Wildlife Service, Office of Subsistence Management. 2002b. Subsistence Management Regulations for the Harvest of Wildlife on Federal Public Lands in Alaska. Anchorage, AK. Available electronically at <http://Alaska.fws.gov/asm/home.html>.

Federal Subsistence Board. 2000. Federal Subsistence Board News Release. Available electronically at <http://www.r7.fws.gov/asm/news00/r071900.html>.

Hamel, C., Herrmann, M., Lee, S. T., and Criddle, K. R. 2000. "An economic discussion of the marine sport fisheries in lower Cook Inlet." Presented before the tenth meeting of the International Institute for Fisheries Economics and Trade, Corvallis, Oregon, July 10 -- 24, 2000. Available electronically at <http://www.orst.edu/Dept/IIFET/2000/abstracts/hamel.html>.

Herrmann, M., Lee, S. T., Hamel, C., Criddle, K. R., Geier, H. T., Greenberg, J. A., and Lewis, C. E. 2001. Final Report: An Economic Assessment of the Sport Fisheries for Halibut, and Chinook and Coho Salmon in the Lower and Central Cook Inlet. OCS

Study MMS 2000-061.

Hicks, M. V. (Editor). 1995. Moose. Alaska Department of Fish and Game (ADF&G), Division of Wildlife Conservation, Federal Aid in Wildlife Restoration Survey-Inventory Management Report 1 July 1991 -- 30 June 1993.

Howe, A. L., Walker, R. J., Olnes, C., Sundet, K., and Bingham, A. E. 2001. Revised Edition: Harvest, Catch, and Participation in Alaska Sport Fisheries During 1997. Alaska Department of Fish and Game (ADF&G), Fishery Data Series No. 98-25 (Revised).

Medred, C. 2002. Catch-Release Isn't the Issue, It's How the Fish Will Be Used. Available electronically at <http://www.and.com/outdoors/v-akcom/story/1296760p_1412687c.html>.

McNair, M. 2002. Alaska Salmon Enhancement Program, 2001 Annual Report. Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries, Juneau, AK. Regional Information Report No. 5J02-04.

Parker, J. F. 2001. Stock Assessment and Biological Characteristics of Burbot in Fielding Lake During 2000. Alaska Department of Fish and Game (ADF&G), Fishery Data Series No. 01-23.

Shively, J. 2002. Alaska Federation of Natives. Personal communication.

State of Alaska, Governor's Office. 2002. "Overview of 2001 southeast Alaska sport fisheries for Chinook and Coho salmon." Available electronically at <http://www.ak.gov/adfg/sportf/region1/geninfo/chin_coho/chin_coho.htm>.

Timmons, L. S. 1991. Opinions and Regulatory Preferences of Holders of Sport Fishing Licenses Resident in the Arctic-Yukon-Kuskokwim Area of Alaska in 1988. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Data Series No. 91-1.

Twitchell, H. 2001. Living cultures, subsistence, and the inhabited wilderness. In: Crossing Boundaries in Park Management: Proceedings of the 11th Conference on Research and Resource Management in Parks and on Public Lands. David Harmon (ed.), Hancock, Michigan: The George Wright Society.

Ulmer, Lieutenant Governor F. (2002). "Comments on Subsistence." Available electronically at <http://www.gov.state.ak.us/ltgov/subsist/subsist.html>.

U.S. Environmental Protection Agency (EPA). 2002. Subsistence management regulations for public lands in Alaska, Subpart D --Seasonal Adjustments --Copper River and Yukon and Kuskokwim River Drainages. 67 Federal Register 120, pp 42185-42187.

U.S. Environmental Protection Agency (EPA). 2002. Subsistence management regulations for public lands in Alaska, Subpart C and Subpart D -- 2002 Subsistence Taking of Fish and Shellfish Regulations; Final Rule. Part III Department of Agriculture, Forest Service, 36 Code of Federal Regulations (CFR) Part 242, Department of the Interior, Fish and Wildlife Service Federal Register (FR) 50 CFR Part 100.

U.S. Environmental Protection Agency (EPA). 2001. Subsistence management regulations for public lands in Alaska, Subpart D; Emergency Closures -- Redoubt and Salmon Lakes Drainages. Federal Register (FR) 66, 211: 54934-54936. Available

electronically at
<http://www.epa.gov/fedrgstr/EPA-IMPACT/2001/October/Day-31/i27342.htm>.

USGS, Alaska Science Center. 2002. Effects of Catch-and-Release Fishing on the Physiology and Hooking Injury of Alagnak River Rainbow Trout, Katmai National Park. Available electronically at
<http://159.189.224.13/research/Fisheries/Alagnak/catch_and_release.htm>.

U.S. Fish ad Wildlife Service. 2002. Alaska Subsistence Fisheries Management. Available electronically at <http;//fisheries.fws.gov/FWSMA/asfm.htm>.

U.S. Fish and Wildlife Service. 2000. "Arctic Refuge: North Slope Moose." Available

00098357

Two important additional sources of pressure on subsistence are encroachment from nonresident tourist activities in general and resident population growth (even if it does not directly result in more hunting or fishing).

00098358

This paragraph states in part "Although the establishment of Gates of the Arctic NPP did not disallow subsistence activities in the park area, it did introduce certain restrictions . . .that increased the difficulty of subsistence." Again on page 4.7-110 this discussion notes that ". . .subsistence for traditional and personal use is allowed within the parks, many subsistence practitioners feel that restrictions on subsistence in the parks makes that activity unduly difficult. . . " The accuracy of these parenthetical observations is not at issue, but the text does not explain why these observations are relevant. Are these examples offered merely to illustrate the point that other activities besides oil and gas development can affect subsistence?

00098359

The statement that "Certain types of development seem to create conditions that reduce subsistence productivity" is vague and misleading. Better to state that "Statistical analysis indicates that subsistence harvest levels have been shown to vary with physical and demographic factors (Wolfe and Walker, 1987)" and then summarize the findings of this analysis as has been done. Correlation is not the same as causation and although Wolfe and Walker use the term "productivity" in their article, it is harvest that is actually used as the dependent variable in the regression analysis.

The Wolfe and Walker (1987) paper and other publications by Wolfe (1996) provide valuable insights into the areal distribution of subsistence harvests. The relationships established by these authors, together with excellent graphics, could help the reader understand the vast amount of tabular and narrative detail presented in this appendix and in the main body of the DEIS.

References:

Wolfe, R. J., and Walker, R. J. (1987). Subsistence economies in Alaska: Productivity, geography, and development impacts. Arctic Anthropology. 24(2):56-81.

Wolfe, R. J. (1996). Subsistence Food Harvest in Rural Alaska, and Food Safety Issues. Paper presented to the Institute of Medicine, National Academy of Sciences Committee on Environmental Justice, Spokane, WA. August 13, 1996. Alaska

00098360

While the "No-Action Alternative Analysis" describes in notable detail (i) activities that would likely occur if this alternative were selected and (ii) the potential environmental consequences of those activities, see, e.g., DEIS § 4.6, including the description of activities at pp. 4.6-1 to 4.6-2, elsewhere in the document elements of the alternative are described in a manner that suggests that they are so speculative as to prevent reasonable analysis. See, e.g., pp. 4.7-1 ("No action has not received engineering and environmental study and its description remains somewhat speculative.") and 4.2-21 ("No specific approved plans or designs for termination activities currently exist. Such plans and designs would have to be developed before specific action could be taken."); see also pp. ES-2 and 2-5 (citing need for additional NEPA documentation for termination process). It is recommended that: (i) early in the FEIS a more comprehensive description of those activities that would occur if the no-action alternative were selected should be identified and (ii) descriptions of those activities as "speculative" should be deleted. See, e.g., pp. ES-2, 2-5, and 4.7-1.

00098361

The DEIS at p. 2-6, 7 eliminates from detailed analysis the alternative or issue of establishing an escrow account for TAPS removal and ROW rehabilitation, in large part because it would involve a separate rule-making procedure with its own NEPA analysis. As the DEIS also correctly points out, however, this alternative or issue need not be considered in its own right because Department of the Interior regulations and the terms of the Federal Grant require each TAPS Owner to demonstrate its ability to meet removal and rehabilitation requirements. See, e.g., 43 C.F.R. § 2883.1-4. Under those circumstances the second to last sentence of paragraph 7 should be modified by inserting before the word "Additional" the words "Moreover, it is

00098362

This table states that TAPS includes 225 secondary roads, while elsewhere the DEIS consistently states that TAPS includes 284 secondary roads. See, e.g., pp. ES-2 and 3.1-10. The reference to 225 secondary roads should be changed to conform to other references in the DEIS so that there is no confusion as to the scope of activities that are being analyzed or rights that will be renewed.

00098363

The DEIS states at p. 3.26-2 that the "lack of eligibility determination [information regarding archaeological sites] is an important information gap in evaluating the effects of the proposed action on cultural resources." That statement suggests that the DEIS cannot properly analyze the effects of the proposed action and alternatives on cultural resources. That suggestion is incorrect and the discussion should be modified accordingly. As the DEIS correctly states elsewhere, under the National Historic Preservation Act and Federal Grant Stipulations additional on-the-ground activities cannot occur without consultation with the State Historic Preservation Officer or other official and activities that are undertaken must cease if a cultural resource is encountered. See, e.g., p. 4.26-91. Where, as here, the project proponent seeks only renewal of existing rights, see, e.g., p. 2-2, that is more than sufficient to protect known and unknown cultural resources as the DEIS itself recognizes. Id.

00098364

While the "No-Action Alternative Analysis" describes in notable detail (i) activities that would likely occur if this alternative were selected and (ii) the potential environmental consequences of those activities, see, e.g., DEIS § 4.6, including the description of activities at pp. 4.6-1 to 4.6-2, elsewhere in the document elements of the alternative are described in manner that suggests that they are so speculative as to prevent reasonable analysis. See, e.g., pp. 4.7-1 ("No action has not received engineering and environmental study and its description remains somewhat speculative.") and 4.2-21 ("No specific approved plans or designs for termination activities currently exist. Such plans and designs would have to be developed before specific action could be taken."); see also pp. ES-2 and 2-5 (citing need for additional NEPA documentation for termination process). It is recommended that: (i) early in the FEIS a more comprehensive description of those activities that would occur if the no-action alternative were selected should be identified and (ii) descriptions of those activities as "speculative" should be deleted. See, e.g., pp. ES-2, 2-5, and 4.7-1.

00098365

The geographic scope of the cumulative effects analysis is unclear, particularly regarding tanker traffic beyond the Valdez Marine Terminal. Page 1-2 states that the TAPS renewal cumulative impacts analysis includes "tanker traffic associated with transporting oil from the Valdez Marine Terminal to market." (Emphasis added.) The DEIS does not appear to include such an analysis. Moreover, the cumulative effects methodology at p. A-48 indicates that the cumulative effects analysis "end[s] with transport of oil in tankers departing from the Valdez Marine Terminal." Additional confusion is created by the statement at p. 4.4-105 that large spills from tanker accidents are not evaluated as part of the TAPS operation, but that they are discussed in the "cumulative analysis Section 4.7.4.4." Section 4.7.4.4, however, does not contain the referenced analysis, other than a limited discussion of some safety features at p. 4.7-38. The FEIS should clearly state the geographical scope of the area analyzed and ensure that the document effectively analyzes that area.

Geliflucation is also soliflucation. Soliflucation, which is not in the glossary, is the term used in the DEIS text, not geliflucation.

(Please note: Tables and figures for this comment could not be included in the database. For full comment, please see Argonne Document #3354)

In order to provide the proper context (and to be thorough in including all relevant subsistence data) for the DEIS analysis of subsistence, the "affected environment" chapter should include a discussion of historical changes in subsistence patterns. The following text could be placed in a new Section 3.24.4: "Historical impacts of TAPS and associated facilities on subsistence."

Suggested Insert:

This section provides a summary of historical changes in subsistence patterns in Alaska. Many trends and developments in Alaska may have affected subsistence and it is difficult to separate out the specific contribution of oil and gas development to the total impact. Moreover, as noted at length in this EIS, there are data gaps on participation in subsistence activities, subsistence effort, and subsistence harvest (see footnote 1 below). Notwithstanding data gaps and other analytical difficulties, it is possible to provide an assessment of historical changes in subsistence patterns. This section summarizes relevant information.

In principle, the qualitative subsistence experience and quantitative subsistence harvest could be affected (positively or negatively) by many factors, including economic growth and development, competition with sport or commercial fishing/hunting, government regulation of fish and wildlife resources, government research on various land or marine species, stock or habitat enhancement programs, access withdrawals or enhancements, and contamination of subsistence resources by oil or other materials associated with oil production and transportation. These factors are addressed below.

Finally, this section provides information on two major subsistence species, moose and caribou, as these are sought after by
both sport and subsistence hunters and also because these cases supplement data presented elsewhere in this EIS and serve as useful illustrations of subsistence impacts.

Growth and Development, a Useful Context for Analysis

Growth is one major potential cause of subsistence impacts. The prosperity of Alaska since it became a state has included population growth and infrastructure growth all of which have the potential to impact subsistence. Population growth (including urban as well as rural population) increases the number of persons potentially competing for available subsistence resources. Economic growth of certain industries (e.g., commercial fishing, tourism and sport hunting and fishing activity) may also reduce subsistence resource availability because their core activities exploit the same resource(s). Infrastructure growth (particularly transportation infrastructure, such as roads, railroads, and aircraft/airports) facilitates access to previously remote areas (see footnote 2 below), which may result in additional competition for subsistence resources.

The history of Alaska in the past century reflects continuing controversy over the desirability of various proposed resource developments and other opportunities for economic growth compared to alternative resource uses including conservation or preservation. Much of the popular literature (see e.g., Chasan, 1971; Coates, 1993;

Hammond, 1994; Mead, 1978; Roderick, 1997; Roscow, 1977; Strohmeyer, 1993), even that focused on the oil and gas industry, chronicles the larger controversy over development in Alaska.

Eventually Alaska did grow. Table 1 provides statistics illustrating the quantitative changes in many factors that could potentially affect subsistence. This table compares 1960 (or thereabouts) levels with those in year 2000 in terms of population (urban, rural, and Alaska Native), highway mileage, annual fishing/hunting licenses issued, the annual commercial salmon harvest (see footnote 3 below) (also shown in Fig. 1), and the annual number of visitors to the state. All of these factors have the potential to affect subsistence.

Reference to Table 1 indicates that between 1960 and 2000 substantial growth occurred in many areas:

-- The State's population nearly tripled; the urban and rural populations increased by factors of 5.5 and 1.1, respectively. The Alaska Native population increased by a factor of 2.3.

-- The extent of the road infrastructure more than doubled (see footnote 4 below) facilitating access to remote areas by persons from elsewhere in the state and nonresidents.

-- The number of sport fishing licenses sold increased by a factor of nearly 8 (partly a reflection of a greater rate of increase in the number of nonresident licenses sold) and the number of hunting licenses sold increased by a factor of 2.4.

-- The weight of the Alaska commercial salmon harvest doubled.

-- The annual number of visitors to Alaska increased by a factor of nearly 30.

Government Decisions

State government decisions that relate both to access to subsistence resources and actual resource allocations also have the potential to affect subsistence resources. For example, as discussed elsewhere in this EIS, the state has opened the Dalton Highway (see footnote 5 below) (formerly a restricted haul road limited to traffic to service the North Slope oil fields and portions of TAPS) to the public, which enabled nonresidents to engage in sport fishing and hunting activity.

Additionally (see Section 3.24) in 1989 the Alaska Supreme Court found that the rural subsistence preference contained in the 1986 state law violated the clause of the Alaska constitution which reserves fish and wildlife resources for "the common use" of all residents in the state, enabling urban as well as rural residents to qualify as subsistence users and substantially increasing the number of potentially qualified subsistence users. Depending upon how rural is defined (the threshold or cutoff population at which a community is classified as urban), the fraction of the Alaska population that is rural is between 20% and 25%. Thus, a decision to add urban residents to the pool of persons eligible to be subsistence users increased the potential size of the subsistence population by a factor of 4-5.

Although the state retains a subsistence priority and the ability to discriminate among various groups of subsistence users (see Section 4.7.8.1), this change in the law is of great concern to Alaska Natives and other rural Alaskans.

Historical Changes in Subsistence

-Spills

As noted elsewhere in this EIS, oil and other (e.g., produced water, seawater, and antifreeze) spills have the potential to cause morbidity and mortality to fish and game resources and adverse effects on habitat. The magnitude of these effects depends upon the type and volume of material spilled, spill location, season, and other factors.

Historically, the most significant spill impacts were those associated with the Exxon Valdez Oil Spill (EVOS). (Technically, this is a cumulative impact, as this resulted from an accident along the marine transportation link, rather than the TAPS pipeline.) As discussed elsewhere in this EIS, the EVOS resulted in significant adverse impacts on subsistence resources and subsistence activity. However, most of the affected subsistence resources have now recovered or are recovering. According to a recent report on injured resources and services by the Exxon Valdez Oil Spill Trustee Council ("the Council"), the following human services that depend upon injured natural resources are deemed to be recovering; recreation and tourism, commercial fishing, passive uses, and subsistence (see footnote 6 below). Regarding subsistence, the Council noted:

"Fifteen predominantly Alaskan Native communities (with a total population of about 2,200 people) in the oil spill area rely heavily on harvests of subsistence resources, such as fish, shellfish, seals, deer, and waterfowl. Many families in other communities also rely on the subsistence resources of the spill area.

Household interviews conducted with subsistence users in communities throughout the spill area in 1989 indicated that subsistence harvests of fish and wildlife in most of the communities declined substantially following the spill. Key factors that reduced harvests included reduced availability of fish and wildlife, concern about possible health effects of eating oiled fish and wildlife, and disruption of the traditional lifestyle due to cleanup and related activities.

. . . Household interviews were repeated each year 1990-1993 and again in 1998. By 1993, the estimated size of the subsistence harvest and participation in subsistence activities appeared to have returned to prespill levels in some communities."

According to this report, subsistence has not recovered fully but recovery is underway.

Unlike EVOS effects, subsistence impacts resulting from spills associated with the operation of the TAPS pipeline, terminal, and the Alaska North Slope (ANS) oil fields have not been significant. This is true for two main reasons. First, pipeline and ANS spill volumes have been very much smaller than that for the EVOS; most spills have been less than fractions of a barrel. From 1977 to late 1999, over 10,000 spills of crude oil and refined product occurred at the ANS fields, along the pipeline, at the Valdez Marine Terminal (VMT), or along the marine transportation link. Yet the single EVOS spill accounted for nearly 79% of the total volume of crude and product spilled (TAPS Owners, 2001). Second, pipeline and other spills have, for the most part, occurred on land, rather than water, which minimized the areal extent of the spill and facilitated cleanup.

- Access

The transportation infrastructure such as airfields and the haul road (particularly the

haul road made access by "outsiders" physically possible (see footnote 7 below). The state's decision to open the haul road to the general public in 1981 made access a reality. Second, access limitations on subsistence and sport hunters alike (motivated

by safety and security concerns) were imposed for certain portions of the ANS, withdrawing lands that might otherwise have provided subsistence harvest. In short the impacts included access provided to others (possible competitors for subsistence resources) and access denied to traditional subsistence users.

(a) Increased Access for Potential Competitors

The haul road was originally limited only to vehicles servicing the ANS fields and portions of the TAPS pipeline. However, the state's decision to open the former haul road to the general public increased access to fish and game resources along its length. There is no doubt that this action created some additional pressure on subsistence resources by non-local sports hunters and anglers (see footnote 8 below). And concern over possible overharvest of fish and game resources lead to the imposition of more stringent hunting and fishing regulations (see Arvey et al., 1990; Arvey, 1991; Burr, 2001; Haynes, 2000 for details of the evolution of fishing regulations). In practice (see Section 3,24,3), fishing pressure (as measured by participation, effort, or harvest) does not appear to have increased substantially, at least in the years since the mid-1980s. Hunting statistics are reviewed in the subsection on moose and caribou.

Based upon the perceived need to limit access by hunters, primarily on the part of communities in Game Management Unit (GMU) 26 (<http://www.state.ak.us/adfg/wildlife/region3/ftyukon.htm>) the Dalton Highway Corridor Management Area (DHCMA) was established in 1980 and amended in 1985. The DHCMA, a controlled use area (CUA), is located 5 miles east and west of the Dalton Highway from the Yukon River north to the southern boundary of the Prudhoe Bay Closed Area. It is approximately 10 miles wide by 360 miles long (an area of 3,600 square miles) (see footnote 9 below). This area is closed to hunting; however, big game, small game, and fur animals may be taken in the area by bow and arrow only. No motorized vehicle, except aircraft, boats, and licensed highway vehicles, may be used to transport game or hunters within the Dalton Highway Corridor area. Hunters are required to stop at any check station operated by ADF&G. Alaska Statute (AS) 19.40.210 prohibits the use of off-road vehicles within 5 miles of the highway right-of-way in this area.

(b) Access Limitations Imposed on Traditional Subsistence Users

Access restrictions on the North Slope are a recurring concern for residents of several ANS communities. In the early 1970s (Haynes and Pedersen, 1989) an area around the Prudhoe Bay oil field was closed to the taking of big game for subsistence. Establishment of this closed area was prompted by public safety and security issues associated with the industrial facilities in the area. The Prudhoe Bay Closed Area encompasses 432 square miles (0.53 percent), not insignificant, but only a small fraction of the size of GMU 26. (GMU 26A totals 56,000 square miles, 26B 15,500 square miles and 26C totals 10,300 square miles.) Other ANS fields permit hunting with minimal restrictions.

Haynes and Pederson (1989) claim that, in addition to formal access restrictions, it is important to consider what might be termed "access deterrents" associated with ANS development. Their perspective in 1989 is summarized in the following excerpt:

"Oil field support facilities have continued to expand along the North Slope. Hundreds of miles of roads and secondary pipelines have been built, as have airstrips,

numerous construction camps, and maintenance facilities. This creates an unusual obstacle course for hunters. Access to hunting areas in the oil fields is becoming more difficult. Hunters must cross networks of gravel roads, built eight to ten feet

above the tundra."

As new exploration and production technology evolved, the relative area taken up by fixed facilities (e.g., wells and piping) in the ANS fields has decreased in proportion to the total field area. In the case of Prudhoe Bay (which began production in 1977), the area disturbed by mine sites and gravel placement was 2.62% of the unit area (Gilders and Cronin, 2000); the corresponding percentage for the Alpine field is 0.17%. Directional drilling, collocation of facilities, and making better use of existing production and power generation facilities are means used to minimize the areal extent of oil production facilities (Gilders and Cronin, 2000). These developments that reduce the visible "footprint" of the production infrastructure will also reduce access impediments in the future.

-Population Growth

Table 1 provides salient statistics on population growth in Alaska over the period from 1960 until 2000. This growth reflects Alaska birth and death rates as well as net in-migration by nonresidents seeking economic opportunity. Although the oil industry is capital rather than labor-intensive and accounts for only a very small proportion of Alaskan jobs, this industry was the principal engine of economic growth since the early 1970s. Purchases of goods and services by oil companies and their employees created more jobs. And revenues paid to the state and local governments created yet more jobs--some filled by Alaskans, but others filled by nonresidents. Additional population might create competition for subsistence resources.

In assessing the subsistence impact of TAPS and the ANS fields it is important to note that the oil industry was not the sole cause of economic or population growth in Alaska in the past and will account for an even smaller proportion in the future. Over the period from 1961 to 1997 (TAPS Owners, 2001), for example, Alaskan employment grew by a factor of nearly 3.3 from approximately 94,000 to 311,000 persons (of which the oil and gas industry accounted for approximately 10,000). But, over this same period, employment in the tourism industry grew by a factor of 14.4, employment in the support (including services trade finance, miscellaneous manufacturing, agriculture, and proprietors) sector increased by a factor of 8.5, and employment in state and local government increased by a factor of 6.5. Oil revenues accounted for growth in some, but not all, of these sectors. Tourism, for example, is an industry with little or no connection to oil exploration or production. And, although oil revenues flowing to state and local governments created the opportunity to expand services, the level of staffing was a ultimately a decision reached by these governments.

Two Cases of Interest, Moose and Caribou

This section provides information relevant to subsistence impacts on moose and caribou on the North Slope. These examples are of interest because (i) both of these species are much sought after by sports and subsistence hunters alike, (ii) moose abundance has declined and recovered in this area (GMU 26) since the late 1980s, whereas caribou populations have significantly increased, (iii) both of these cases illustrate the evolution of game management policies (iv) the quality and quantity of the available harvest data differ markedly for these two species and (v) competition between sports and subsistence hunters has only been at issue for moose; caribou have been sufficiently abundant to avoid the need for imposition of stringent harvest limits as part of a game management plan.

-Moose

Moose are found throughout most of Alaska and are prized by both sport and subsistence hunters. Historically moose were not abundant in the North Slope area. As noted by one researcher, "Moose were scarce in arctic Alaska before the early 1950s when populations expanded and reached relatively high densities in the limited riparian habitat in major drainages" (see Hicks, 1995a or USFWS comments available electronically at <http://www.r7.fws.gov/nwr/arctic/wtmoose.html>). Predation by wolves, as well as hunting by humans, contributed to the historical scarcity of moose in this area (Hicks, 1995a). Hicks (1995a) continues:

"The reduction in wolf numbers by federal control programs during the late 1940s and early 1950s was important in allowing moose populations to increase and become established in most of the riparian shrub habitat on the North Slope. Moose are at the limit of their range in the eastern Arctic."

Beginning in the 1950s, moose populations began to increase in the Arctic Slope--occasional animals ranged as far north as the arctic coast in summer, but wintering moose were confined primarily to the inland riparian systems. The greatest wintering densities occurred on the central Colville River and its tributaries (Coady, 1983). Beginning in the mid- to late-1980s (Hicks, 1995a; USFWS, op. cit.) moose populations in various portions of GMU 26 began a substantial decline. According to USFWS (http://www.r7.fws.gov/nwr/arctic/wtmoose.html), several possible explanations have been offered for this decline:

"During winter, moose are confined to relatively limited areas of riparian willows along the northern margin of the Brooks Range where snow is usually not drifted by the wind. There is some evidence that concentrations of moose in these areas reached or possible exceeded the maximum level that the habitat could support. Thus moose may have declined as a result of habitat overuse. Another consideration is that wolves and bears have become more abundant on the north slope as a result of bear harvest restrictions established in the early 1970s and reduced aerial hunting of wolves. In addition, during the 1980s, human harvest in some areas increased as the region became more accessible due to completion of the Dalton Highway. It is likely that all of these factors (habitat overuse, predation, and human harvest) in combination functioned to reduce moose populations on the Alaskan North Slope."

In 1995, the State of Alaska Board of Game (BOG) and the Federal Subsistence Board (FSB) issued regulations closing nearly all of the ANS to moose hunting. As of 2002 the applicable hunting regulations are as follows:

-- State rules (ADF&G, 2002i): GMA 26A is a controlled use area (CUA). From August 1 through Sept 14, the area is closed to the use of aircraft for moose hunting, including transportation of moose hunters, their hunting gear, and/or parts of moose. (However, this does not apply to transportation of moose hunters, their gear, or moose parts by aircraft between publicly owned airports in the CUA.) There is a bag limit of one bull for residents in GMU 26A during the open season from Aug. 1 through Sept. 14. GMUs 26A, B, and C are closed to nonresidents.

-- Federal rules (FSB, 2002): GMU 26A -- that portion of the Colville River drainage downstream from and including the Chandler River-1 bull. Federal public lands are closed to the taking of moose except by rural Alaska residents of Unit 26 (not including the Prudhoe Bay-Deadhorse Complex), Point Hope and Anaktuvuk. For the remainder of GMU 26 A; 1 bull during the period from Sept. 1 through Sept. 14. GMUs 26 B and C have no Federal open season.

Table 2 and Fig. 2 provide ADF&G data on moose harvest, number of hunters, and average harvest per hunter for GMU 26 for the years 1977 through 2001. The effects

of the BOG and FSB actions are evident in these exhibits. These data series are complete and consistent with available collateral information. There is some data ambiguity, however, as both sport and subsistence harvests are included and it would be desirable of these data were disaggregated.

Table 3 shows identified big game prey populations and harvest objectives by species and GMU in Alaska. This reflects a finding made by the Alaska BOG for each species for each GMU. The finding for moose in GMU 26 (and all subunits) is negative, meaning that there is no planned harvest objective. Moose populations and harvests are managed in many other GMUs (see Table 3), including all or portions of GMUs 9, 13, 14, 15, 17, 19, 20, 21, 24, and 25.

As noted, the exact reason(s) for the decline in moose population are not known. However, hunting pressure is believed to a contributing factor. ADF&G clearly articulated this view for GMU 26 in 1995 (Hicks, 1995a):

"Habitat severely limits the number of moose that can be sustained and harvested, and the concentrated nature of moose distribution and open habitat create the potential for excessive harvest in accessible areas. Although travel to the area is expensive and often logistically difficult, hunting pressure around the larger and better-known aircraft landing sites is considerable. Concern about the excessive concentration of hunters has been expressed by guides, outfitters, hunters, and ANWR staff. The Dalton Highway in central Subunit 26B provides unique opportunities for viewing and photography, but also created the potential to adversely affect moose populations and associated human uses by increasing access to certain areas."

However, a biologist with the ADFG noted several factors other than hunters were responsible for the decline in moose numbers in the Colville River region of GMU26 (Carol 2002):

"The rapid decline appeared to result from a combination of factors. The moose population was at relatively high density and probably exceeded the carrying capacity of the area. Extra long winters and competition from hares may have reduced carrying capacity for the moose population. This led to poor calf survival, starvation, and disease induced mortality. The copper deficiency plus the northern location of the population could have made the population more susceptible to a decline. Physiological stress caused by insects during the hot "buggy" summer of 1995 may also have interfered with the moose's ability to recover from the winter. When the population began to decline, relatively high predator densities probably accelerated the process. Bear predation in the summer may have been a major factor in poor calf survival."

It is important to note that the population has since recovered. (Carol G. 2002. The rise, fall, and recovery of the Colville River moose population. The Moose Call vol. 14, pages 3-5.)

Hunting restrictions on moose in GMU 26 became gradually more stringent, prior to the virtual closure in 1995. (In the interests of space a detailed discussion of each change in the moose hunting regulations for GMU 26 is omitted.) One change of note followed the 1990 decision that all Alaska residents qualified as subsistence users under state law. To compensate for the large potential increase in hunters eligible for the subsistence season, the season was shortened to 5-15 September and 1 November -- 31 December, and the one-bull bag limit was extended to all hunters.

Additionally, a 50-inch minimum antler size was established for nonresidents (Hicks, 1995a).

The case of moose in GMU 26 is interesting for three reasons:

-- It is consistent with the views of many rural subsistence users that the state's 1990 subsistence eligibility decision led to more stringent hunting regulations.

-- It is consistent with the views of some subsistence users that more stringent hunting regulations reduced some rural subsistence use. Neither TAPS nor ANS development has been implicated in moose population declines.

-- It shows that useful subsistence data are available for some GMUs and some species. Subsistence data for moose are generally available for most GMUs although not disaggregated into sport and subsistence users.

-Caribou

Caribou in GMU 26 are also an interesting case. Like moose, caribou are prized by sport and subsistence hunters. GMU 26 covers important caribou territory, being occupied (in various parts) by the Western Arctic Caribou Herd (WAH), Teshekpuk Caribou Herd (TCH), Central Arctic Caribou Herd (CAH), and the Porcupine Caribou Herd (PCH) [Murphy and Lawhead, 2000; Ballard et al., 2000]. The Central Arctic Herd's range most directly overlaps the North Slope oilfields. Because of the proximity of the range areas of these herds to oil development on the ANS, these herds have been studied extensively by biologists interested in activity budgets, movements, behavioral responses, habituation, and population level effects [Murphy and Lawhead, 2000; Ballard et al., 2000 and references contained therein]. The overall conclusion of these studies is that while "We cannot be conclusive about the cause and effect relationships between oil development and herd population dynamics," there are no adverse population effects associated with proximity to the ANS fields. Caribou populations for these herds have fluctuated in the past (see Barnett, 1983) but generally increased over the years since the early 1970s (Murphy and Lawhead, 2000; Ballard et al., 2000; for more information see Hicks, 1994, 1995b, 1996, 1997, 1998, 1999, 2000). Current population estimates vary by herd; the WAH is the largest, with an estimated population of over 460,000 animals in 1997 (Murphy and Lawhead, 2000; Ballard et al., 2000).

As shown in Table 3, caribou are identified big game prey populations per 05 Alaska Administrative Code (AAC) 92.108, and desired population and harvest target ranges have already been established for the CAH and PCH--estimates are pending for the TCH and WAH.

Table 4 summarizes available harvest data for caribou in GMU 26 as taken from Alaska Wildlife Harvest Summary data for various years. Unlike the case for moose--and surprisingly in view of the importance of caribou--the ADF&G harvest data for caribou in GMU 26 is characterized by gaps, missing data (for one or more subunits), and potentially anomalous observations. Moreover, ADF&G personnel believe (see e.g., Hicks 1995b) that harvest reporting rates by local hunters is often poor and, therefore, that total caribou harvests are understated. These data are not analyzed further, except to note that—given the fact that the hard populations are increasing, overharvest does not appear to be a problem. However, we recommend that the available caribou data collection effort be reviewed and modified to capture relevant and consistent data.

Present state hunting regulations (ADF&G, 2002i) for caribou in GMU 26 vary with

subunit and whether or not the hunter is a resident--but allow for a relatively substantial harvest (five to ten caribou in most areas). In GMU 26A, for example, residents are permitted five caribou per day, nonresidents five caribou in total. The

DHCMA has bow hunting restrictions and lower allowable bag limits (two caribou for residents and one caribou for nonresidents).

Federal regulations (FSB, 2002) identify the communities for which customary and traditional use determinations have been made as:

-- GMUs 25A and C: Rural residents of GMU 26 and the residents of Anaktuvuk Pass and Point Hope.

-- GMUs 26 B: Rural residents of GMU 26 and the residents of Anaktuvuk Pass, Point Hope, and Wiseman.

The Federal bag limits and seasons are:

-- GMU 26 A: 10 caribou per day; however, cow caribou may not be taken May 16 -- June 30. Federal public lands south of the Colville River and east of the Killik River are closed to the taking of caribou from Aug. 1 -- Sept. 30, except by rural residents of GMU 26, Anaktuvuk Pass, and Point Hope. The season is July 1 -- June 30.

-- GMU 26 B: 10 caribou per day; however, cow caribou may be taken only from Oct.1 -- Apr. 30. The season is from July 1 -- June 30.

These too can be viewed as relatively substantial allowances.

At least from the early 1970s, bag limits for caribou were similar to those above. Indeed, at one time (Barnett, 1983), the state considered permitting commercial harvest as a means for rapidly reducing the size of the WAH. However, the state concluded (Barnett, 1983) that:

"Such a practice would set a questionable precedent and would be widely criticized by the public. Once commercial operations were established, it would be difficult to eliminate them when harvest reduction became necessary. We recommend that the commercial harvest option be considered only as a last resort if it ever becomes clear that a serious density-dependent decline is imminent."

With respect to access-related issues, ADF&G personnel acknowledged that improved access might affect game management policies, but the relative abundance of caribou has not made access or hunting pressure an issue. For example, ADF&G reports on the CAH (see e.g., Barnett, 1983) noted:

"Sport harvest of the CAH is low relative to herd size and productivity. However, harvest is increasing with greater use of the haul road and as more fly-in hunters discover the area. There is currently a surplus of bulls, however, and limiting harvest to bulls should accommodate sport hunters without affecting herd productivity."

A recent estimate for the WAH is several GMUs (Hicks, 1998) is that "subsistence harvests are estimated to take 20,000 caribou within the range of this herd annually, and sport hunters 3,000 caribou."

The relevant conclusions for caribou are:

-- There are no adverse population level effects associated with proximity to ANS oil

facilities or TAPS.

-- Caribou have been relatively abundant in GMU 26 and hunting regulations have not been stringent. There is no evidence that competition with sport hunters has adversely

impacted subsistence harvests, although this has been a persistent concern.

-- Caribou harvest and hunter participation/effort data are deficient, and the collection program should be restructured to collect relevant and valid data.

There is a recognized need for improvements in subsistence data collection. However, a lot of information is available, which provides greater context for the subsistence discussion. Changes to subsistence over the years relate primarily to the prosperity Alaska has experienced since Statehood - population growth, economic growth and infrastructure growth. The resulting expansion of commercial fisheries, tourism, sports hunters and fishermen, and industry have together changed the context of toady's subsistence activities. Ultimately minimizing impacts to subsistence becomes a decision in resource management and allocation. The state and federal governments continue to have the authority, responsibility, and funding to provide this management.

References:

Alaska Department of Fish and Game (ADF&G). 2002a. Alaska Historical Commercial Chinook Salmon Catches, 1878-1998. Available electronically at <http://www.cf.adfg.state.ak.us/geinfo/finfish/salmon/catchval/history/chin1878.htm>.

Alaska Department of Fish and Game (ADF&G). 2002b. Alaska Historical Commercial Chum Salmon Catches, 1878-1998. Available electronically at <http://www.cf.adfg.state.ak.us/geninfo/finfish/salmon/catchval/history/chum1878.htm>.

Alaska Department of Fish and Game (ADF&G). 2002c. Alaska Historical Commercial Coho Salmon Catches, 1878-1998. Available electronically at <http://www.cf.adfg.state.ak.us/geninfo/finfish/salmon/catchval/history/coho1878.htm>.
(continued next page)

Alaska Department of Fish and Game (ADF&G). 2002d. Alaska Historical Commercial Pink Salmon Catches, 1878-1998. Available electronically at <http://www.cf.adfg.state.ak.us/geninfo/finfish/salmon/catchval/history/pink1878.htm>.

Alaska Department of Fish and Game (ADF&G). 2002e. Preliminary Alaska Commercial Salmon Catches 2002. Available electronically at <http://csfish.adfg.state.ak.us/BlueSheets/BLUEWebReport.php?Printable=Yes>.

Alaska Department of Fish and Game (ADF&G). 2002f. Alaska Commercial Salmon Harvest, 1970-1999. Available electronically at <http://www.cf.adfg.state.ak.us/geninfo/finfish/salmon/catchval/history/1970-99s.htm>.

Alaska Department of Fish and Game (ADF&G). 2002g. Alaska Commercial Salmon Harvests: Exvessel Values. Available electronically at <http://www.cf.adfg.state.ak.us/geninfo/finfish/salmon/catchval/bluesheet/00exvesl.htm>.

Alaska Department of Fish and Game (ADF&G). 2002h. Alaska Historical Commercial Sockeye Salmon Catches, 1878-1998. Available electronically at <http://www.cf.adfg.state.ak.us/geninfo/finfish/salmon/catchval/history/sock1878.htm>

.

Alaska Department of Fish and Game (ADF&G). 2002i. Alaska Hunting Regulations, Effective Dates July 1, 2002 - June 30, 2003. Available online at <www.state.ak.us/adfg/wildlife/wildmain.htm>.

Alaska Department of Fish and Game (ADF&G). 2001. Alaska Subsistence Fisheries: 1999 Annual Report. Division of Subsistence, Juneau, AK.

Alyeska Pipeline Service Company (APSC). 1999. Trans-Alaska Pipeline System Facts. Alyeska Pipeline Service Company, Anchorage, AK.

Arvey, W. D. 1991. Annual Management Report for Sport Fisheries in the Arctic-Yukon-Kuskokwim Region, 1989. Alaska Department of Fish and Game (ADF&G), Fishery Management Report No. 91-3.

Arvey, W. D., Merritt, M. F., Kramer, M. J., and Hallberg, J. E. 1990. Annual Management Report for Arctic-Yukon-Kuskokwim Region, 1986. Alaska Department of Fish and Game (ADF&G), Fishery Management Report No. 90-1.

Ballard, W. B., Cronin, M. A., and Whitlaw, H. A. 2000. Caribou and Oil Fields. In: The Natural History of an Arctic Oil Field Development and the Biota. (J. C. Truett and S. R. Johnson, Eds.) Chapter 5. Academic Press, New York, NY.

Barnett, J. A. (Editor). 1984. Annual Report of Survey-Inventory Activities, Part II. Caribou. Volume XIII Federal Aid in Wildlife Restoration Project W-22-1, Job 3.0. Alaska Department of Fish and Game (ADF&G), Juneau AK.

Burr, J. 2001. Fishery Management Report for Sport Fisheries in the Arctic-Yukon-Kuskokwim Management Area, 1999-2000. Alaska Department of Fish and Game (ADF&G), Fishery Management Report No. 01-3.

Carol G. 2002. The rise, fall, and recovery of the Colville River moose population. The Moose Call vol. 14, pages 3-5.

Chasan, D. J. 1971. Klondike: The Alaskan Oil Boom. Praeger Publishers, New York, NY.

Coady, J. W. 1983. Moose survey-inventory progress report, GMU 26. In: Annual Report of Survey-Inventory Activities, Part III. Moose. Volume XIII Federal Aid in Wildlife Restoration Project W-22-1, Job 1.0. (J. A. Barnett, Editor.) Alaska Department of Fish and Game (ADF&G), Juneau, AK.

Coates, P. A. 1993. The Trans-Alaska Pipeline Controversy: Technology, Conservation, and the Frontier. University of Alaska Press.

Gilders, M. A., and Cronin, M. A., 2000. North Slope Oil Field Development, In: The Natural History of an Arctic Oil Field Development and the Biota. (J. C. Truett and S. R. Johnson, Eds.) Chapter 2. Academic Press, New York, NY.

Eggers, D. M. (Editor). 2002. Run Forecasts and Harvest Projections for 2002 Alaska Salmon Fisheries and Review of the 2001 Season. Regional Report No.

5J02-01 Alaska Department of Fish and Game (ADF&G), Juneau, AK.

Federal Subsistence Board (FSB). 2002. Subsistence Management Regulations for the Harvest of Wildlife on Federal Public Lands in Alaska, Effective July 1, 2002 --

June 30, 2003. Available online at <http://alaska.fws.gov/asm/home.html>.

Hamond, J. 1994. Tales of Alaska's Bush Rate Governor: The Extraordinary Autobiography of Jay Hammond, Wilderness Guide and Reluctant Politician. Epicenter Press, Fairbanks, AK.

Haynes, T. L. 2000. TAPS Right-of-Way Lease Renewal Project, Alaska Department of Fish and Game Division of Subsistence Work Order #1: Subsistence Information for Alyeska Pipeline Service Company Environmental Report. Alaska Department of Fish and Game (ADF&G), Fairbanks, AK.

Haynes, T., and Pedersen, S. 1989. Development and Subsistence: Life after Oil. In: Alaska Fish and Game. November – December 1989. Alaska Department of Fish & Game, Juneau, AK.

Hicks, M. V. (Editor). 2000. Caribou. Federal Aid in Wildlife Restoration Survey-Inventory Management Report 1 July 1999– 30 June 2000. Alaska Department of Fish and Game (ADF&G), Division of Wildlife Conservation. September, 2000.

Hicks, M. V. (Editor). 1999. Caribou. Federal Aid in Wildlife Restoration Survey-Inventory Management Report 1 July 1998-- 30 June 1999. Alaska Department of Fish and Game (ADF&G), Division of Wildlife Conservation. October, 1999.

Hicks, M. V. (Editor). 1998. Caribou. Federal Aid in Wildlife Restoration Survey-Inventory Management Report 1 July 1997-- 30 June 1998. Alaska Department of Fish and Game (ADF&G), Division of Wildlife Conservation. October, 1998.

Hicks, M. V. (Editor). 1997. Caribou. Federal Aid in Wildlife Restoration Survey-Inventory Management Report 1 July 1996 -- 30 June 1997. Alaska Department of Fish and Game (ADF&G), Division of Wildlife Conservation. October, 1997.

Hicks, M. V. (Editor). 1996. Caribou. Federal Aid in Wildlife Restoration Survey-Inventory Management Report 1 July 1995 -- 30 June 1996. Alaska Department of Fish and Game (ADF&G), Division of Wildlife Conservation. December, 1996.

Hicks, M. V. (Editor). 1995a. Moose. Federal Aid in Wildlife Restoration Survey-Inventory Management Report 1 July 1991 -- 30 June 1993. Alaska Department of Fish and Game (ADF&G), Division of Wildlife Conservation. Juneau, AK.

Hicks, M. V. (Editor). 1995b. Caribou. Federal Aid in Wildlife Restoration Survey-Inventory Management Report 1 July 1994 - 30 June 1995. Alaska Department of Fish and Game (ADF&G), Division of Wildlife Conservation. December, 1995.

Hicks, M. V. (Editor). 1994. Caribou. Federal Aid in Wildlife Restoration Survey-Inventory Management Report 1 July 1993 -- 30 June 1994. Alaska Department of Fish and Game (ADF&G), Division of Wildlife Conservation. December, 1994.

Leask, L., Killorin, M., and Martin, S. 2001. Trends in Alaska's People and

Economy. Prepared for the Alaska 20/20 Partnership Bringing Alaskans Together and Chart Our Future. Institute of Social and Economic Research (ISER), University of Alaska Anchorage (UAA), Anchorage, AK.

Mead, R. D. 1978. Journeys Down the Line; Building the Trans-Alaska Pipeline. Doubleday & Company, Inc. Garden City, NY.

Morris Communications Corporation. 2002. The Milepost: Trip Planner for Alaska, Yukon Territory, British Columbia, Alberta, and the Northwest Territories. Morris Communications Corporation, Augusta, GA.

Murphy, S. M., and Lawhead, B. E. 2000. Caribou. In: The Natural History of Arctic Oil Field Development and the Biota (J. C. Truett and S. R. Johnson, Eds.) chapter 4. Academic Press, New York, NY.

Pedersen, G. 1998. The Highway Angler III. Fishing Alaska Publications.

Roderick, J. 1997. Crude Dreams: A Personal History of Oil and Politics in Alaska. Epicenter Press, Fairbanks, AK.

Roscow, J. P. 1977. 800 Miles to Valdez: The Building of the Alaska Pipeline. Prentice Hall, Englewood Cliffs, NJ.

TAPS Owners. (2001). Draft Environmental Report for Trans-Alaska Pipeline System Right-of-Way Renewal. Available electronically at <www.tapsrow.com>.

_____

Footnotes:

1 -- This is particularly true for subsistence data prior to 1977, when oil first flowed through TAPS.

2 -- Transportation infrastructure growth in Alaska has proven particularly controversial --dating back to the late 1800s. For an interesting summary of conflicts between developers (boosters) and preservationists see Coates (1993) [particularly pp. 51 et seq.]. For example, Donald MacDonald, a locating engineer for the Alaska Road Commission, was one of the leading early proponents of an international highway to Alaska. His vision of a bridge to "a veritable paradise of game" that would provide a primitive abundance of fish and game for settlers foreshadowed later controversy over the construction of the Alaska (also called "Alcan") Highway in the 1940s. Anchorage (Alaska's most populous city) originated in 1915 as a tent city housing construction workers for the Alaska Railroad (Coates, 1993). Bob Marshall, an employee of the U.S. Forest Service, opposed any road construction north of the Yukon and worried that "drifters" and "such people. . . would find somehow or other a broken-down fourth-hand automobile to get to what they would imagine would be this land of plenty" (Coates, 1993).

3 -- The commercial salmon harvest is relevant to subsistence concerns because salmon are commercially harvested and regarded as desirable gamefish by sports anglers. The estimated subsistence consumption of salmon in 1999 was approximately 1 million fish (ADF&G, 2001). The commercial harvest was over 216 million fish in that same year.

4 -- Highways completed in the period from the 1950s to the present include the Denali Highway (completed 1957), George Parks Highway (1971) [see <http://www.icdc.com/~neubauer/denali.htm>], the Taylor Highway (1953), and the Dalton Highway (1974). Additionally, many highways were improved during this period, such as the Richardson Highway (hard surfaced in 1957) and portions of the Steese Highway (44 miles paved in 2001) [Morris Communications Corporation, 2002].

5 -- Construction of what was derisively termed the Hickel Highway and this later

decision to open the haul road are discussed in several popular accounts (see e.g., Chasan 1971; Coates, 1993; Hammond, 1994; Haynes and Pedersen, 1989; Roderick, 1997; Roscow, 1977).

6 -- Exxon Valdez Oil Spill Trustee Council 2002. Exxon Valdez Oil Spill Restoration Plan Draft Update on Injured Resources and Services, Anchorage, AK. (August 6, 2002)
7 -- It is interesting to note that the access issue was foreseen in the original EIS for TAPS (Special Interagency Task Force for the Federal Task Force on Alaskan Oil Development, 1972). In assessing fish and wildlife management issues related to the pipeline the EIS (EIS Vol. 1 p 151) noted:

"The second primary group of pipeline-related fish and wildlife management needs would stem from secondary impacts, such as increased public hunting and angling pressure, infractions of fish and game laws, human encroachment on fish and wildlife populations and habitat, and other fish and game impacts which are outside the influence of the pipeline stipulations. The authority for meeting most of this latter groups (sic) of management needs would lie with the Alaska Department of Fish and Game.

Management techniques would have to be carefully tailored to each particular need. The Alaska Department of Fish and Game anticipates that with a few years

00098368

While the "No-Action Alternative Analysis" describes in notable detail (i) activities that would likely occur if this alternative were selected and (ii) the potential environmental consequences of those activities, see e.g., DEIS § 4.6, including the description of activities at pp. 4.6-1 to 4.6-1, elsewhere in the document elements of the alternative are described in a manner that suggests that they are so speculative as to prevent reasonable analysis. See, e.g., pp. 4.7-1 ("No action has not received engineering and environmental study and its description remains somewhat speculative.") and 4.2-21 ("No specific approved plans or designs for termination activities currently exist. Such plans and designs would have to be developed before specific action could be taken."); see also pp. ES-2 and 2-5 (citing need for additional NEPA documentation for termination process). It is recommended that: (i) early in the FEIS a more comprehensive description of those activities that would occur if the no-action alternative were selected should be identified and (ii) descriptions of those activities as "speculative" should be deleted. See, e.g., pp. ES-2, 2-5, and 4.7-1.

Comments provided on Appendix E -- ANILCA Section 810 Analysis of Subsistence Impacts, apply here as well. They are:

Appendix E Comment: Appendix E provides the BLM's proposed § 810 ANILCA analysis of subsistence impacts. The proposed analysis finds on page E-5 that "impacts of the proposed action on subsistence would not reach the threshold of 'may significantly restrict' subsistence uses." However, the proposed analysis also finds on page E-10 that "[c]umulative impacts associated with the proposed action on subsistence meets the threshold of "may significantly restrict" subsistence uses. As discussed below: (1) the finding that cumulative impacts "may significantly restrict" subsistence uses is unwarranted and attributable in large measure to misapplication of the term "cumulative impacts;" and alternatively, (2) the record fully supports a determination by the BLM that the criteria specified in ANILCA § 810(a)(3)(A), (B) and (C) are met.

1. The proposed cumulative impacts finding is unwarranted.

Notwithstanding the lesser threshold embodied in § 810 of ANILCA*, the reasonably foreseeable cumulative impacts of the proposed action do not support a finding that the proposed project "may significantly restrict" subsistence access. In large measure, the flaws in BLM's analysis flow from application of incorrect legal standards in the analysis of cumulative impacts in the DEIS.
NEPA requires not only analysis of the potential effects associated with the proposed action and alternatives, but also consideration of other activities that may affect the area of potential impact that have occurred, are occurring, and will occur. See, e.g., 40 C.F.R. §§ 1508.7 and 1508.25(a)(2). Future activities that need be considered are not all that may occur -- only "reasonably foreseeable" activities need be addressed. See, e.g., 40 C.F.R.. §§ 1508.7 and 1508.8. As the DEIS properly recognizes, "reasonably foreseeable" activities (i) are those with "firm near-term plans," such as "[p]roposals for which NEPA documents are in preparation or finalized," "[p]roposals in a detailed design phase," "[p]roposals listed in formal Notices of Intent published in the Federal Register or state publications," "[p]roposals that are funded," "[p]roposals for which enabling legislation has been passed," and "[p]roposals that have been submitted to federal and state regulators to begin the permitting process," and (ii) do not include "uncertain or speculative actions." See, e.g., DEIS at p. 4.7-13 (emphasis added). Those conclusions square with controlling case law. See, e.g., Kleppe v. Sierra Club, 427 U.S. 390, n.20 (1976) (rejecting argument that NEPA requires "a comprehensive impact statement covering contemplated projects in the region as well as those that have already been proposed," as the term "proposed" is construed under NEPA) (emphasis added); Presidio Golf Club v. National Park Service, 155 F.3d 1153, 1163 (9th Cir. 1998) ("Agencies must consider only those indirect effects that are 'reasonably foreseeable.' They need not consider potential effects that are highly speculative or indefinite.").

Although the DEIS recognizes these settled limitations, the analysis of cumulative effects it employs is inconsistent with them. For instance, the DEIS considers the cumulative effects arising from oil and gas activities in over two dozen undeveloped areas that in all cases do not satisfy the limitations identified above. Compare, for instance, Tables 4.7-2 and 4.7-3, as well as "human habitation and development" in northern and central Alaska projected to occur over the next 30 years. See also p. 4.7-36 ("This DEIS assumes that it is reasonably foreseeable that sometime in the next thirty years natural gas will be transported from the North Slope to market in Canada and the United States") (emphasis added). Moreover, the analysis should

recognize that, through processes such as Resource Management Plans and actions taken by Congress, TAPS ROW uses have priority and ROW lands will not be granted for other purposes, the paradigm case where cumulative effects must be

considered. See, e.g., Council On Environmental Quality's Considering Cumulative Effects Under The National Environmental Policy Act at p. 19 ("To include all proposals ever considered as other actions would most likely overestimate the future effects of cumulative effects on the resources, ecosystems, and human communities; therefore, the analysts should develop guidelines as to what constitutes 'reasonably foreseeable future actions' based on the planning process within each agency") (emphasis added). The result is a cumulative effects analysis that overstates cumulative impacts associated with the proposed action and alternatives, such as those addressing subsistence. See, e.g., pp. E-8, E-10, E-12, and E-13.

A second important flaw in the analysis flows from BLM's community subsistence analysis. Based on 25 years of on-the-ground experience (including observed subsistence impacts and a five-fold increase in caribou population), the results of studies, and other factors, the DEIS concludes that the potential effects on subsistence uses are minimal and localized. See, e.g., pp. ES-3, 4.3-84, 4.3-86, and 4.7-108. The DEIS then addresses what is known and unknown about subsistence uses in over 20 villages. See, e.g., Appendix D. While the latter information is useful, it is not necessary for purposes of the analysis required by NEPA, ANILCA, and other legal requirements. Indeed, in the current ANILCA analysis, community-based subsistence information from limited areas seems to be the single factor that led to a "may significantly restrict" finding. See p. E-10.

IN SUM, THE FEIS SHOULD: (i) ADDRESS THE CUMULATIVE EFFECTS OF THOSE ACTIVITIES THAT ARE TRULY REASONABLY FORESEEABLE, NOT ALL ACTIVITIES THAT MAY OCCUR WITHIN THE NEXT 30 YEARS; AND (ii) SHOULD ANALYZE IN A GENERAL FASHION POTENTIAL EFFECTS ON SUBSISTENCE, REACH CONCLUSIONS BASED ON THAT ANALYSIS, AND STATE CLEARLY THAT COMMUNITY INFORMATION PROVIDES BACKGROUND INFORMATION THAT IS USEFUL BUT NOT CRITICAL TO THE BROADER CONCLUSIONS REACHED. A REASONED CONCLUSION BASED UPON SUCH AN ANALYSIS SHOULD FIND THAT SUBSISTENCE IMPACTS FROM THE PROPOSED ACTION ARE EVEN LESS THAN THOSE IDENTIFIED IN THE DEIS AND DO NOT EVEN MEET THE LESSER "MAY SIGNIFICANTLY RESTRICT" ANILCA STANDARD.

2. Alternatively, the BLM should determine that the ANILCA § 810(a)(3) criteria are met:

ANILCA § 810(a) provides that no "withdrawal, reservation, lease, or other use, occupancy or disposition of the public lands which would significantly restrict subsistence uses shall be effected" until the Federal Agency gives the required notice and holds a hearing in accordance with § 810(a)(1) and (2), and makes the three determinations required by § 810(a)(3)(A), (B) and (C). The BLM's proposed findings in its subsistence evaluation are that all the alternatives (including the no-action alternative) may significantly restrict subsistence uses. As a consequence of this finding (if left unchanged), the BLM should document, in the FEIS, that it undertook the requisite notice and hearing procedures required by ANILCA § 810(a)(1)-(2).

In addition, unless the BLM reconsiders its cumulative impacts findings, it must also make the three determinations required by § 810(a)(3)(A), (B) and (C):

A. that such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands;

B. that 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. that reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

Such determinations are warranted and supported by the record.

As an existing use with a 25-year operational history, TAPS' potential impacts to subsistence resources and uses are well-documented, minimized, and effectively mitigated to the point that adverse impacts attributable to the Preferred Alternative are found to be "extremely small." DEIS at pp. 4.3-84, 4.3-86 and 4.7-108 ("The evaluation of impacts to subsistence under the proposed action concludes that any negative impacts that occurred would be extremely small."). Applicable existing measures and stipulations to pre-empt or mitigate impacts to subsistence resources and uses are detailed in the DEIS in § 4.1, including the general requirements of JPO oversight and its adaptive compliance monitoring system (§ 4.1.1), special buried or elevated pipeline designs for wildlife crossings (§ 4.1.2.10), numerous stipulations mitigating or preempting impacts to biological systems (§ 4.1.3.3 and Table 4.1-2), spill prevention and response requirements (§ 4.1.4), and social, cultural and economic mitigation measures (§ 4.1.5).

These measures, subject to the ongoing adaptive compliance monitoring and mitigation provisions of the Federal Grant, are intended to specifically ensure that subsistence resources and uses are not significantly restricted by the proposed action. Because of the numerous existing restrictions and protections, and their demonstrated effectiveness over the 25-year operational history of TAPS, BLM has found that the Preferred Alternative by itself would not result in significant restrictions of subsistence resources and uses. However, considered together with past, present, and reasonably foreseeable future cumulative effects, the possibility exists that all the activities combined may significantly restrict subsistence uses. This possible restriction on subsistence uses cannot be avoided while accomplishing the purposes and needs identified with respect to TAPS in § 1.1 of this DEIS. Nor can this possible effect be avoided if the BLM were to adopt either the less-than-30-years alternative or the no-action alternative because the cumulative impacts of these alternatives still reach the "may significantly restrict" threshold under ANILCA § 810.

With respect to the amount of public lands involved, the existing nature of TAPS and the functional requirement that TAPS extend the full 800 miles from the North Slope to Valdez, establishes real and certain limitations and requirements. As presently configured, although TAPS extends 800 miles, it encompasses only 16.3 square miles of land (including the privately-owned Valdez Marine Terminal, which is not within the ROW being renewed). See Environmental Report for the Trans-Alaska Pipeline System Right-of-Way Renewal at Table 2.1-1. The typical width of the ROW on federal lands is 54 feet for buried sections and 64 feet for elevated sections. Id. Only 47 percent of the 800-mile ROW is on federal lands. DEIS at p. 3.3-72. Thus, the amount of public lands involved in the Preferred Alternative does represent the minimum necessary to accomplish the needs and purposes of TAPS.

The BLM has considered and balanced all these factors, including, in particular, the existing restrictions, limitations, and mitigation measures applicable to the Preferred Alternative to address subsistence concerns. These measures have provided significant and effective protection for subsistence resources and uses during the 25-year operating history of TAPS. Accordingly, the BLM should determine that the significant restriction that may occur under the Preferred Alternative (or any other of

the alternatives analyzed in the DEIS), when considered together with the cumulative impacts resulting from past, present, and reasonably foreseeable future actions: (A) is necessary, consistent with sound management principles for the use of the public

lands included within this TAPS ROW renewal; (B) will involve the minimal amount of public lands necessary to accomplish the purposes of the Preferred Alternative; and (C) reasonable steps have been and will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

---

* The BLM has made a valuable observation about differing standards for the NEPA and ANILCA § 810 analysis. As stated at page E-8, it is possible to reach a conclusion under NEPA (or other federal or state statutes and regulations that address subsistence) that direct, indirect, and reasonably foreseeable cumulative impacts are not significant for NEPA purposes, while at the same time finding under

00098370

". . .valves (RGVs) [ADD: remote cathodic protection generator installations], and commercially available. . . "

The batteries ARE the power supply for RGVs. They are not used as uninterruptible power supplies. The sentence should read: ". . .and battery power for remote gate valves (RGVs)."

00098371

ADD: Remote cathodic protection installations are also electrically powered by gas fired generators. Where the generator sets were in proximity to the fuel gas line, they are fueled by natural gas (methane). In other areas, buried propane tanks supply the liquefied gas for fuel. Where commercial electricity is available, the local CP system is conventionally powered.

00098372

ADD: ". . . under ground throughout most of its entire length."

Comment: There are a few places where the FGL is above grade and visible by design; i. e. highway bridges, pig traps, and the multiplate-arch road crossings.

00098373

References to the 0.585 million gal of DRA should be removed since the topic of the paragraph is about fuel and the DRA is not burned for fuel. This is a misconception as to the use of DRA.

00098374

The DEIS states in table: "Table 3.1-2 gives the characteristics of the water wells located along the TAPS ROW."

If this table shows the well characteristics on TAPS, then the inactive water wells should be deleted for clarity. Also, the well identifier numbers should be referenced from the source of the info (ADEC) and not from a personal communication.

The table entries should be checked for accuracy. Some examples of errors are: (1) MP 200 and Old Man 2 wells are not active and were abandoned years ago; (2) PS 4 water source was a river not a well; and, (3) geologic/hydrologic terms for aquifers [talik, subpermafrost] are used incorrectly (e.g., PS 3 water source).

00098375

Five Mile airport is closed. It is marked as closed on aviation maps and also by FAA. References to this landing strip should be removed from this paragraph. If you include closed airfields here then you should include all closed airstrips (i.e. Chandalar, Happy Valley).

00098376

"lowland was occupied by Lake [Add: Atna], an ancient glacier-dammed lake. . .." [cited by Hamilton 1994]. Recommend checking this reference to ensure that Atna is quoted correctly and is spelled correctly. The Ahtna Cooperation and people spell their name differently.

00098377

"Permafrost can occur in soils as well as bedrock. Generally, the [Delete "ice" -- Add "moisture"] content in the soil or bedrock is related to porosity. [Delete "and moisture content of the material"] [Add "If the material is perennially frozen, higher ice content is expected in the finer grained soil than in coarser grained soils. However in some areas, the permafrost is naturally devoid of moisture and vis-a-vis ice. Soils typically have more moisture and ice content that fractured bedrock."] Stability of the

00098378

". . . and the enlargement of thermokarst lakes in the Chatanika River Valley. . ."

Alyeska is not aware of this enlargement. Aerial photos are not substantial proof of growth---there might have been changes in water level due to rains. But more importantly, the primary features for this mile post are Oxbow lakes and gravel pits whose water levels are tied to the height of the adjacent Chatanika river. Reference needed by Argonne.

00098379

The paragraph should mention that depressurization of the pipeline through the leak was not considered. This assumption leads to considerably high estimates for spill volumes from larger hole sizes.

00098380

The listing of the five "unlikely" scenarios is confusing. Scenario 13 is listed at the start of the paragraph, but it is not mentioned in the list provided in lines 8 -- 13. Please clarify this.

00098381

The concluding sentence of the paragraph states: "The Capstone assessment does not postulate spill volumes." This is an incorrect statement. Since a different approach was used in the Capstone assessment, a spill volume is not directly computed for the seismic scenario; however, spill volumes are postulated for any and all large holes in the pipeline. Please remove this sentence or provide additional text

00098382

The spills section would be from a clear description of the analytical methodology and from the greater use of figures to present results. The linkage between results and conclusions should be clarified.

00098383

An inordinate amount of text is devoted to the Fire Analysis. Much of the text that appears in this section should be relegated to the appendices.

00098384

The pipeline is designed for the largest credible earthquake in each seismic zone it crosses. The return period for the largest credible earthquake is about 500 years. There is no evidence in the literature or analysis in the DEIS that a perceived warming trend increases risk for landslides and liquefaction along TAPS.

Suggestion: Change 1st sentence to: "While it is true that an overall climatic warming trend, or other microclimate effects related to the presence of TAPS, could change existing permafrost and soil conditions (especially in the interior and southern sections of the pipeline) the pipeline was specifically sited and designed to avoid or mitigate areas of potential landslides or liquefaction. In addition, the right-of-way is continuously monitored for early signs of changing conditions. Therefore, the risk of landslides or liquefaction affecting the pipeline is very unlikely." Delete 2nd sentence about the 1964 earthquake.

00098385

Section 4.2.2.4.3 is similar in title and content as section 4.2.2.6.2. Possibly combined or clarify the sections.

00098386

Seismicity: Change "likelihood of happening is unknown" to "happening is very

00098387

Cumulative Effects should be summarized in the text at beginning or by use of a summary table.

00098388

This is an incorrect assumption. Absent a transportation link to market for crude and gas liquids, not enough infrastructure would be left to support gas production and gas exploration. Also, a stand-alone gas production operation on the North Slope without crude oil handling capability would not be economic and would not occur.

00098389

This summary is confusing: is it for CE effects of air emissions or for the entire section so far? If it is for air section, put the summary up front and label it as air. If it is for the entire section to this point, put it up front and label it appropriately. There should be a consistent way to show summaries of the chapters and sections the carries throughout the DEIS.

00098390

This summary is confusing. There should be a consistent way to show summaries of the chapters and sections the carries throughout the DEIS.

00098391

Add another sentence after 1st sentence. "Most of the material sites TAPS today uses are joint use with Alaska DOT/PF. TAPS use of these sites is secondary in quantities to highway requirements. Future gas line construction would also use

00098392

Alyeska is not aware of any PCBs in any of their components. The original pipeline material was ordered after the ban on the use of PCBs. In 1996, the line-wide ANSC project removed any components that might contain PCBs including florescent light ballasts.

00098393

Line 3: remove "all"

Line 4: delete "in response to a JPO requirement."

Lines: 5-8: delete "and also provide secondary containment for releases that may occur from these valves." Comment: these valve vaults do not have bottoms and this is an irresponsible statement.

Lines 9-13: delete "deepening the pipeline trench. . . to serve as the floor of the vault,". There are no slabs below the later installed vaults.

Last 2 lines: change: . . . the project is expected to be complete in 2002. All but six check valves will have vaults but all valves have been inspected since 1994.

00098394

The Yukon Highway bridge is not a TAPS structure. It is owned by ADOT/PF with a TAPS rights-of-way issued for the existing pipe and one future pipe.

00098395

Removal of pipe under state road crossings would not include removal of bridges or culverts. Recommend stating that workpad and access road culverts would be converted to low water crossings but not state highways.

00098396

Removal of the heat pipes intact as suggested in the last sentence of the footnote its not likely to be practical. More likely would be to assume that the heat pipes will be vented to the air or to a water bath---followed by cutting them one foot below grade.

The water bath approach could have secondary values since the water could be applied to the adjacent soil as a source of nitrogen fertilizer to promote plant growth. Lower 48 agricultural practices actually inject anhydrous ammonia into the soil behind plows as a way fertilizing while tilling farm land after harvesting

00098397

Alyeska is not aware of any PCBs in any of their components. The original pipeline material was ordered after the ban on the use of PCBs. In 1996, the line-wide ANSC project removed any components that might contain PCBs including florescent light ballasts.

00098398

Delete last sentence. There is no evidence that the pipe will frost heave up. Previously abandoned in-place pipe (i. e. Tolovana R, 1976; Sag R., 1975; Dietrich R., 1985; and the Atigun R., 1992 have never frost heaved. The soil overburdenweight and non-frost susceptible soil around the pipe at the MLR would preclude this heave.

00098399

At an aggressive corrosion rate of 12 mils a year, it would take over 50 years for the pipe to corrode and possibly collapse, so this scenario would not occur in the 30 year study period and should be deleted.

00098400

It is presumptive to state that electrification of the pump stations would eliminate the need to store turbine fuel at the pump stations. At pump stations that are already gas powered, turbine fuel is stored as a back up fuel. At other stations, both commercial power and natural gas are not available, so the need for turbine fuel remains the primary source of power albeit turbine pumps or electric-driven pumps. Recommend deleting this statement.

00098401

Box Entitled -- Impacts of Proposed Action on Soil and Permafrost: Change and add: ". . . the risk of earthquake-triggered liquefaction and landslides [delete "would"] [add "could"] be expected to increase." [Add: However with a continued program of surveillance, monitoring and a reasonable maintenance program, these conditions would be located and mitigated prior to any damage.]

00098402

"Impressed current systems located at PS 1, 2, 3, and 4 [Add: and also at several remote impressed current rectifier sites] provide cathodic protection for. . . "

00098403

There was never any detectable VSM movement (tilting or settlement) as the result of Vanish Creek flooding. If flood damage had been left unrepaired, VSM movement might have occurred.

". . . where high flows in 1999 [delete: resulted in significant VSM vertical movement or tilting, it was necessary to deflect] [add: required deflection of] the flow into its original location." Suggest Argonne provide reference for this event.

00098404

Sacrificial anode does not require excavation for replacement. They are not removed. Merely new ones are installed if low pipe wall cathodic protection is needed.

Typically, anode replacement is not performed. Alyeska recently instituted an impressed current system to provide CP from deep well anodes or distributed ground beds via rectified DC current, which are electrically powered.

Therefore, it can be said that the need to continually dig up the pipe and disturb the ground surface is reduced from what it was previously.

00098405

Box Entitled -- Heat Pipes: The 3rd sentence from the end should read: "However, buildup of hydrogen gas forms a non-condensable blockage in the upper section of fins and ultimately reduces the efficiency of some heat pipes to a degree at which they must be replaced."

00098406

The "Concrete Plug" should be changed to state: "Metal Cap"

Also, the annulus between the VSM wall and the heat pipe pair shows an unidentified material. This material should be labeled as "Sand/Water Slurry". It functions as a heat transfer medium. This sand/water slurry does extend from grade to top of VSM as shown.

The VSM design as drawn in Figure 4.1-4 is not typical. First, the sand/water slurry backfill around the VSM as shown in the figure, continues aboveground on the outside of the VSM to the top of the VSM with no apparent means of support. Second, the typical VSM installation required that the sand/water slurry inside the VSM be filled only up to the original ground surface and not to the top of the VSM as shown. Third, the typical VSM cap is a slotted steel cap that is sealed with silicon, not a concrete plug as shown.

00098407

This particular project was not undertaken "in response to a JPO directive." It was initiated by Alyeska to facilitate continuing inspection of belowground valves. Delete: "In response to a JPO directive"

Six valves (previously inspected) are not scheduled to have vaults installed. Recommend insert: "Alyeska expects to complete the check valve vault program in 2002. All but six belowground valves will have a vault."

00098408

This comment also applies to Figure 4.1-2: The two figures have used the term "Grade" to reference unclassified backfill. Grade refers to final elevation. Recommend deleting term "Grade" from figure.

00098409

". . . previous permafrost has thawed since the pipeline was constructed, forming a flat, swamping area."

This is a misleading statement. This area was a flat swampy area before it thawed. The words: "forming a flat, swamping area." should be deleted.

00098410

Airports belong to the State and are under FAA jurisdiction. No airstrips are owned by TAPS. Alyeska only maintains the airports of Galbraith and Prospect Creek.

Some access roads are public roads -- in place before TAPS.

Most material sites are joint use with ADOT/PF.

00098411

With the shutdown of PS8 and 10 and the pending shutdown of PS12, septic systems might not be required.

Although the leach field at PS 7 is in marginal soils, there has been only one former need to replace the system and at that time there was a higher camp population. After twenty years of operation, PS07 has performed adequately and it is unlikely that another site for a leach field could not be found within the cleared pump station site.

00098412

Need to correct. ". . . continue to reside at BP and ARCO housing facilities. . . "

Currently, personnel from PS1 are housed in BP's Prudhoe Bay housing facility.

00098413

In Footnote 4 -- Need to correct. "Currently personnel from PS1 reside in Deadhorse, Alaska, in facilities owned by BP and ARCO."

This should read: "Currently personnel from PS1 [delete: reside in Deadhorse , Alaska, in facilities owned by BP and ARCO] [add: are housed in BP's Prudhoe Bay housing facility] ."

00098414

Add a last line: "Most of these material sites are joint use sites. The Alaska Department of Transportation/Public Facilities also uses these sites and if a future gasline were built, these same sites would be open for use."

00098415

The original design recognized land slides as a problem. Appendix A-3.1079, Section4.2.4.1 listed 6 six alternatives "to eliminate or to minimize the potential slope stability problems. . ." It is incorrect to say that TAPS merely avoided "previous landslide areas . . .to the extent possible when the pipeline was constructed."

The primary mitigative measures described in the Design Basis and implemented in the Construction phase was to (1) avoid potentially unstable slopes. Where this was not possible -- there were other design alternatives. These were (2) reduce slope angle to a safe one by through-cut or fill; (3) keep the potentially unstable soil frozen by using heat pipes; (4) bury the pipe deep in bedrock such that the slide plane is above the top of pipe; (5) minimize thermal disturbances during construction and used enhanced refrigeration [MLR] to keep ground frozen; and (6) provide continuous field engineering during construction phase to recognize areas that did not meet design assumptions and needed re-engineering.

This last sentence should be edited to read: "The pipeline routing avoided most landslide prone areas. Where it was not possible to avoid, design parameters were used to minimize damage to the pipeline foundation. In some of the design fixes, the reliance on a frozen foundation for the VSMs is required. Engineering is monitoring those slopes that require frozen soil for stability." (See Argonne Document #133: TAPS Design Criteria and Design Basis, Appendix Volume 3, Geotechnical Aspects)

00098416

These two paragraphs appear to be a duplication of each other. Recommend deleting the second paragraph.

00098417

Change the word "would" to "may" in the sentence "The resulting effects would lower mechanical strength of frozen to non frozen soil and promote solifluction, debris flows, rock falls. . ." The soil types will dictate the resulting potential problems if thawed. For buried pipe this would be a non-problem. For the aboveground pipe, the thickness of the poor soil and along with other geologic conditions would have a

00098418

It is uncertain as to what lake near MP440 the DEIS is addressing. In the floodplain of the Chatanika R. are oxbow lakes created by migration of the meandering river. Also there is a gravel-mining site. Water in both of these structures are tied to the river's height of water.

Recommend striking reference to growth of thermokarst lakes. If there is other evidence of this process, then cite the document. The photographs are insufficient to support a conclusion that these thermokarst lakes are becoming larger.

00098419

The possibility that the thaw bulb will shrink in buried pipeline areas (due to aggrading permafrost from the base of the thaw bulb or laterally from the sides will depend on the temperature of the pipeline (at low flow rates), the continued thermal impact of the workpad and disturbed construction zone, and the temperature regime of the surrounding permafrost. On the northern end of the pipeline (north of Atigun Pass) the permafrost is cold (mean annual temperature less than -5 degrees C) and it is conceivable that some refreezing of the thaw bulb can take place, even with a warming climate. In the warm permafrost region (south of Atigun Pass) little or no refreezing is expected due to the continued thermal input from the pipeline (even at low flow rates) and solar input through the workpad.

It is also inaccurate to state that: "ground settlement could resume." In the 1980s, ground settlement was an inconvenience when the thaw bulb was growing, however since the mid-1990s it has not been a recognizable problem.

Recommend striking-out most of the latter portion of this paragraph.

00098420

The comment about shrinkage of the thaw bulb around the belowground pipe due low flows leading to frost heave is in error. The author justified the statement with "where fine-grained soil is dominant in the subsurface." However, the pipe is not buried in fine-grained soils [ref. Stip. 3.3.1 (3&4)]---and besides the granular material surrounding the pipe is not subject to frost action by design. The pipe was designed to last as much as two winters without oil prior to start-up and not be frost-jacked.

Recommend striking entirely the sentence: "Ground ice could grow, producing. . . dominant in the subsurface."

00098421

Road Dust: No Action Alternative would result in temporary increase, not reduction, of road dust. Also, the road Fairbanks north to the Yukon River is being paved currently and the Dalton is being chip-sealed from Yukon to Deadhorse, so road dust will decrease in all scenarios in the long term.

00098422

Spills: It is incorrect to conclude that a reduction in spill cleanup and response infrastructure would result in greater impact of spills. The infrastructure would only be reduced in response to reduced risk of spills as industrial facilities are reduced. The actual response capability would be defined by the regulatory approved contingency plans and would most likely not result in increased risk of spills or severity of impact.

00098423

Economics: A natural gas pipeline would not be built absent TAPS and associated oil production infrastructure, so a gas line would not offset the effects of end of TAPS operations. (see 4.8.3, Irreversible commitment of resources, last paragraph).

00098424

The DEIS states: ". . . including 9.3 mi of new construction. The replacement -- result in extensive disturbance to ROW, including existing terrestrial and wetland vegetation."

-- Only two of the 4 pipe replacements in the history of TAPS.

-- Only two of these have required new right-of-way and disturbances.

-- The 9.3 mi Atigun River replacement pipe was installed adjacent to the Atigun River and within its active floodplain. This area was either non-vegetated or sparsely vegetated. Therefore, the project did not result in extensive disturbance to terrestrial and wetland vegetation.

00098425

" . . . presence of the gravel pad may not allow the development of mature natural communities." This is not necessarily true. Reference is needed.

00098426

With the thawing of permafrost from whatever the cause, the result is not ". . . increasing losses of vegetative communities. . .." Changes to the soil only result in establishment of new communities. Fireweed come up in profusion after fires, dandelions and fireweeds are the first to establish communities after glacier retreat.

00098427

In the sentence: " . . . resulted in the elimination of extensive areas of terrestrial and wetland communities (see 3.18)."

The use of "extensive" is unclear. The DEIS should state the area eliminated as a proportion of available wetlands in the region, state, or other relevant basis area. It is important to note that most of the State of Alaska is classified as wetlands, and less than 2 percent of Alaska's wetland area has been developed.

00098428

There seems to be considerable concern about thermokarsting. Thermokarsting is a natural geologic phenomenon.

When oil first entered the pipeline, the ground both above pipe springline and adjacent to pipe centerline settled. It was expected and anticipated. The original design required considerable Thaw Settlement Overfill (TSO) to be added as part of the final regrading. Also the Maintenance standards required for the depressions to be filled which occurred within our right of way.

Impacts to permafrost is allowed for operation of TAPS as long as it does not jeopardize the foundation of the Pipeline and related facilities.

00098429

The flood at MP 752 was the result of ADOT road maintenance which blocked the culvert and was not the result of TAPS operation. The flood would have occurred if TAPS had not been there, and the erosion would have been just as bad.

00098430

Deep pipe burials are specially designed to withstand overburden pressures. On TAPS the overburden maximum depth is 40 ft. See Argonne Document #3357 for Design Basis Update, DB-180, section 2.3.2.3, Table 2.5 for source. The DOT maximum burial limit cited in the DEIS is not applicable to TAPS. The last sentence

00098431

The DEIS states: "If the trends indicated [add: adverse] deterioration in the condition of the pipeline [add: foundation], necessary [delete: precautions] [add: corrective maintenance] would be taken to remedy the situation. [delete: or the pipeline would be shutdown.]"

00098432

Please explain the term "minimum regret". Do you intend to state "minimum regression"?

00098433

The word "radically" in this sentence appears incorrect. Is the intended word

00098434

This comment also applies to page 4.7-66, Paragraph 1, Line 1: Talik is zone of thawed ground bounded on top and bottom with frozen ground.

"Since water would be withdrawn from taliks during winter, oxygen demand by sediments and water could reduce the concentration of oxygen in the water needed by overwintering fish."

The fish do no live in the talik--since it is below the ground surface.

00098435

General Comment for entire section.

The DEIS approach of exhaustively analyzing the effects from a set of arbitrarily selected hypothetical spill scenarios (particularly those judged unlikely) is not particularly useful in predicting the effects of right-of-way renewal. A more instructive approach would be to analyze the effect of spills predicted from the 25 years of actual TAPS operating history.

Focusing extensive analysis on "very unlikely" events is misleading (e.g., air craft crash at VMT tank farm with fire). Most of the analysis should focus on the spill frequency, size distribution and source that is predicted based on the last 25 years.

00098436

Regarding road dust, the Dalton highway is being chipped sealed (paved). It is expected to be maintained in this condition for the next 30 years, therefore, there will be less generation of dust than in the past.

00098437

If a gasline were run in close proximity to TAPS, the joint use of facilities would be possible. This would include barrack facilities, communication, and power, water, sewer facilities during construction. After the start of Gasline operations, the TAPS control room and operators may operate both pipelines simultaneously.

00098438

"One possible route would parallel the TAPS until reaches the [delete: Fairbanks] [add: Delta] vicinity, then it would run roughly. . . "

00098439

This section should be revised to ensure consistency with the Biological Evaluation submitted by BLM to USF&WS and the NMFS. This section should note that the FWS and NMFS have concurred with the Biological Evaluation as part of the Endangered Species Act, Section 7 Consultation.

This section of the DEIS should be strengthened. At a minimum it is necessary to include a brief section to summarize the content of this section and distill the key points to remember. For example, a graphic showing the total (or per capita) amount of all subsistence resources harvested by village (for appropriate or typical years) would be preferable to the detailed material presented in Table 3.24-1 or in Appendix D. Several authors (e.g., Wolfe and Walker, 1987; Wolfe, 1996) have developed useful quantitative summaries of subsistence that could be advantageously incorporated into the text. Moreover, these authors have analyzed subsistence data to identify the key determinants of subsistence harvest. This analytic foundation can explain the observed differences in the level of subsistence harvest.

References:

Wolfe, R. J., and Walker, R. J. (1987). Subsistence economies in Alaska: Productivity, geography, and development impacts. Arctic Anthropology. 24(2):56-81.

Wolfe, R. J. (1996). Subsistence Food Harvest in Rural Alaska, and Food Safety Issues. Paper presented to the Institute of Medicine, National Academy of Sciences Committee on Environmental Justice, Spokane, WA. August 13, 1996. Alaska Department of Fish and Game, Division of Subsistence, Juneau, AK.

As noted at several points in the Subsistence sections of the DEIS, there are limited data available to accurately quantify the impacts of oil development on subsistence in Alaska. Accurate and complete subsistence data will always be of use when considering public policy in Alaska in the future. Therefore, it is suggested that the DEIS recommend that a government agency undertake a comprehensive study of subsistence in Alaska to provide a baseline data for future public policy documents and reference. Both the State and Federal government have programs in place, and adequate financial resources in their existing budgets, to study subsistence in Alaska.

The State government has the responsibility and means to conduct such a beneficial study. The Alaska Department of Fish and Game (ADF&G) already has a Subsistence Division which, in conjunction with the Sport Fish and Wildlife Conservation Divisions of the ADF&G, collects and analyzes subsistence data. The Governor's Operating Budget (available online from the State of Alaska) notes that the Subsistence Division is tasked with coping with the dual management (Federal and State) of subsistence resources in Alaska, implementing appropriate subsistence laws and regulations, and gathering subsistence data. The Operating Budget lists, among other things, these key goals for activities and data collection for the subsistence unit in FY2003:

-- The Subsistence Division is expected to gather fisheries harvest data from 95% of the communities in the interior of Alaska and 25% of the communities in the Alaskan Arctic.

-- The Subsistence Division is expected to gather wildlife harvest data from 45% of the communities in the interior of Alaska and 25% of the communities in the Alaskan Arctic.

To fund these and other projects, the Subsistence Division unit will receive approximately 4.4 million dollars in FY 2003 with 51% of the money coming from Federal funds. As noted above, other ADF&G divisions (with their own budgets) will contribute information to augment data collected by the Subsistence Division. In fiscal year 2003, the entire ADF&G is expected to spend 135.7 million dollars.

The Federal Subsistence Management Program should also be involved in the study. The Federal Subsistence Management Program in Alaska is lead by the US Fish and Wildlife Service (USFWS) and four other federal agencies: the National Park Service, the Bureau of Land Management, the Bureau of Indian Affairs and the USDA Forest Service. The lead agency, the United States Fish and Wildlife Service, maintains a headquarters in Anchorage and employs approximately 500 people statewide with hundreds of others who work part-time or volunteer during field seasons. The USFWS has conducted many fishery and wildlife harvest studies in Alaska and spent 9 million dollars for Sport Fish restoration programs and 5.5 million dollars for wildlife restoration during fiscal year 2001. It is clear that adequate resources have been

00098442

During the public hearing held in Barrow, Alaska, an oral comment was made to the effect that the North Slope Borough was incurring undue financial burden by providing search and rescue services to respond to emergencies on the Dalton Highway. It was claimed that the Barrow Search and Rescue team (funded by the North Slope Borough) was expending resources to find and rescue lost or sick travelers and respond to tourists with car troubles.

In fact, the Barrow Search and Rescue team has only responded to three emergencies on the Dalton Highway within the North Slope Borough since January 1995. A review of the publicly available database and search-and-rescue flight logs lists the following three events:

-- On August 14, 1995, Barrow Search and Rescue personnel responded when a hunting guide and his passenger were killed in an airplane crash near the Dalton Highway south of Galbraith Lake.

-- On May 4, 1996, state troopers requested the aid of Barrow Search and Rescue personnel to remove human remains from a car near Galbraith Lake.

-- On August 11, 2002, Barrow Search and Rescue personnel responded to a pair of hunters in distress five miles away from their car. One of the hunters was a North Slope Borough resident and had obtained a personal locator beacon from the Barrow Search and Rescue team prior to going afield.

These data were compiled by identifying helicopter search-and-rescue flights within a few miles on either side of the Dalton Highway in the North Slope Borough. Additionally, conversations with Barrow Search and Rescue personnel suggest that search and rescue teams are very rarely dispatched to the Dalton Highway area.

By comparison, over the same time period, Alyeska responded to 44 incidents along the Dalton Highway within the North Slope Borough. Their response included: aiding disoriented drivers, rescuing lost and injured hunters, and providing medical attention and medivac services at vehicular accidents.

00098443

ANILCA is unique legislation. Congress took advantage of hind sight elsewhere in the country and put a large quantity of Alaska land into various conservation units both to preserve it for future generations and to allow future economic development, such as those actions on the North Slope and being considered as part of this cumulative effects section. Section 101(d) is worth highlighting in that it clearly captures the intent of ANILCA to provide "sufficient protection for the national interest in the scenic, natural, cultural and environmental values" to allow the "satisfaction of economic and social needs".

This section of the DEIS identifies certain “agency consultations” conducted in conjunction with the NEPA process. One of the identified consultations discussed is the BLM’s § 7 ESA consultations with NMFS and FWS. This discussion in the DEIS should be updated in the FEIS to describe the now-completed process and results, which are identified below. In addition, this section should identify and discuss the current consultation process by the BLM under § 305(b) of the Magnuson-Stevens Act regarding essential fish habitat (“EFH”). The status of the BLM’s EFH consultation is also com on below.

-- ESA Consultation

Section 7 of the ESA requires federal agencies, including BLM, to ensure that their actions avoid jeopardizing listed species or adversely modifying designated critical habitat. In accordance with these requirements, BLM fonnulated a biological evaluation (“BE”) analyzing the effects of the ROW renewal on listed species occurring within the action area. On May 7, 2002, BLM submitted the BE to NMFS and to the FWS, thus initiating consultation with the Services. On June 18, 2002, FWS issued a letter concuning that the proposed action is not likely to adversely affect listed species under its jurisdiction. On July 1, 2002, NMFS likewise issued a letter concurring with the findings contained in the BE that the proposed action is not likely to adversely affect listed species or designated critical habitat under its jurisdiction. Copies of the BE and associated concurrence letters are attached for inclusion in the record as Appendix A.

As the enclosed BE indicates, BLM concluded that the proposed action is not likely to adversely affect either the spectacled eider, Steiler’s eider, humpback whale, fin whale, or Steller sea lion. Because no critical habitat for these species exists within the action area, BLM also concluded that the proposed action is not likely to adversely affect critical habitat. Among other evidence, these conclusions are supported by the fact that TAPS has not had direct, indirect, or cumulative adverse affects on these species during its 25 years of operation.

-- EFH Consultation

Section 305(b) of the Magnuson-Stevens Act requires federal agencies, including BLM, to consult with NMFS if their actions may adversely affect designated essential fish habitat During an EFH consultation, NMFS may recommend conservation measures that minimize the effects of the proposed action on EFH. In the present case, BLM has prepared an EFH assessment, and has determined that ROW renewal may result in short-term adverse effects to EFH under certain circumstances. Consequently, BLM is presently engaging in EFH consultation with NMFS to ensure its proposed action adequately minimizes the potential effects of ROW renewal and associated pipeline operations on designated freshwater and marine EFH. A copy of the EFH assessment is attached for inclusion in the record as Appendix B.

As discussed in the enclosed EFH assessment, in freshwater areas, adverse effects may result from existing facilities (e.g., disturbance of runoff patterns); normal operations (e.g., water withdrawals or discharges); routine maintenance (e.g., road maintenance); and repair activities (e.g., ground-disturbing activities). In addition, river and low-water crossings involve potential disturbance of EFH through channel alteration, water quality changes, blockage to migration, and sediment runoff, which can affect both physical EFH habitat and salmon or their prey. In estuarmne or marine areas, EFH may be affected by surface runoff from facilities and permitted discharges.

Based on past operations of TAPS, accidental oil spills are anticipated or likely to occur in freshwater, estuarine, or marine waters where EFH is present. Most of the effects of these spills are expected to be short-lived, with anticipated recovery following cleanup. Further, oil spill modeling results and historical operations indicate that the magnitude of predicted spill events into marine and fresh waters will be such

that no significant adverse effects will occur.
Best management practices, regulatory compliance, surveillance, and specific plans

(e.g., oil spill prevention, erosion, and sedimentation) have been established to avoid, minimize, and mitigate potential adverse effects of the continued operation of TAPS on EFH. Pipeline operations have also incorporated design features (e.g., shut-off valves) and monitoring systems to detect problems that might occur. In addition, there is extensive Federal and State oversight (e.g., oversight through the JPO) and enforcement of the statutes and regulations governing the ROW. With these measures, it is anticipated that any potential adverse effects of TAPS and the associated ROW on designated EFH would be short-term in duration, and would not be significant in nature.
In summary, based on the past experience with TAPS, as well as available modeling and other information, BLM has determined that the proposed action may result in short-term adverse effects on designated EFH. However, these effects are expected to be adequately minimized and mitigated by existing conservation measures associated with the proposed action. In accordance with applicable EFH regulations, BLM has requested that NMFS engage in abbreviated EFH consultation, and confirm that existinc mitiaation and minimization measures adeouatelv urotect desirnated EFH.

--NHPA Consultation

00098445

The DEIS evaluates three alternatives for Grant renewal (including non-renewal) and concludes 30-year renewal is the preferred alternative: The TAPS owners concur in this finding and strongly recommend that it be retained as the preferred alternative in the Final EIS. Thirty-year renewal is both appropriate and necessary given the economic importance of TAPS to the country in general and the State of Alaska in

00098446

. TAPS was created as the sole means of bringing North Slope oil to market and all the best information available indicates there is at least. another 30 years of commercially producible reserves on Alaska's North Slope. TAPS has safely and reliably served this purpose for 25 years and is prepared to do so for the next 30.

00098447

Maintaining the proper focus for the Grant renewal EIS is also an important aspect of this process. While TAPS is an essential piece of infrastructure and Grant renewal is required for its continuation, renewal is only one piece of many processes that affect the continued operation of TAPS. The DEIS appropriately evaluates a wide variety of issues related to TAPS but eliminates others from detailed analysis. These issues are mentioned but not pursued because they generally are the subject of processes that are separate from and independent of the straightforward land use decision that underlies the renewal question. Section 2.5 of the DEIS properly identifies items raised during scoping - such as the Exxon Valdez litigation, Dalton Highway status, and DR&R tariff issues - as out of scope.

Among the items raised and considered but elinated from detailed analysis in the DEIS is the concept of adding an advisory committee or citizen oversight function for TAPS. During the course of the public hearings on the Draft EIS a number of commentors spoke either in favor of or opposed to this concept and we believe, therefore, that some additional comment on this issue is appropriate.

First, we refer you to that portion of our scoping comments that addresses this point, a copy of which is enclosed and hereby incorporated into our formal DEIS comments. As our scoping comments note, Federal law does not favor the creation of formal citizen advisory functions. The Federal Advisory Committee Act (FACA) and the Congressional intent language creating this act make it clear that a genuine purpose and need for an advisory function must be established and an approval process completed before creation of the function is permitted. This rationale stems basically from the fact that public oversight, is the responsibility of the government. The authority does not exist within the context of the right of way renewal process to establish such an advisory group nor to compel the TAPS owners to provide .funding. It has, therefore, correctly been addressed as outside the scope of this decision process.

But, even if it were not, the rationale for creating an oversight function does not exist. In the case of TAPS, the Joint Pipeline Office, a consortium of state and federal agencies, has already been established to carry out TAPS oversight. Numerous opportunities for formal and informal public participation exist within the authorities included in the JPO as well as oversight provided by other state and federal agencies exercising jurisdiction over TAPS. In fact, many of the areas of concern commented on during the DEIS hearings, such as oil spill response plans, are the subject of other public processes. Finally, information about TAPS is widely and publicly available.

Responses for Document 00098

00098-001: A parenthetical statement that defines “nonlocal hunters” has been added to Section 3.21.1.2.

00098-002: The sentence in Section 3.21.1.7 has been modified as suggested.

00098-003: The error in Section 3.21.1.9 has been corrected.

00098-004: The paragraph in Section 3.21.2 has been reorganized as suggested.

00098-005: The discussion in Section 3.21.2 on moose population trends in the North Slope has been modified based on information provided by Carol (2002).

00098-006: Only information on the Porcupine caribou herd was provided in the paragraph because information on the other three North Slope herds was previously discussed (because the ROW crosses through the range of those herds). Also, a callout to the table that presented this information was provided in the paragraph. Information on the growth of the four North Slope caribou herds since the 1970s has been added to Section 3.21.2.

00098-007: The first two sentences were intended to be strongly interrelated. The “potential” alteration of animal habitats and migration patterns, if it were to materialize, would result in subsequent impacts to subsistence, commercial, and sport hunting and fishing. That this inference was not apparent suggests that a change to the text is appropriate. A change has been made to strengthen the interconnection between impacts to animal habitats and migration patterns and impacts to subsistence, commercial, and sport hunting and fishing.

00098-008: Thank you for your comment.

00098-009: The sentence and references in Section 4.3.17.2 have been changed as suggested.

00098-010: The Shideler and Hechtel (2000) citation has been incorporated in Section 4.3.17.2.

00098-011: The sentence in Section 4.3.17.2 has been modified as suggested.

00098-012: The sentence in Section 4.3.17.2 has been replaced with the one suggested in the comment.

00098-013: The text in Section 3.3.3 has been corrected.

00098-014: Spill debris and contaminated media that exhibit characteristics of hazardous waste are also adequately provided for by provisions in any ADEC-approved remediation plan and by existing hazardous waste management procedures. Changes have been made to the text in Section C.3 of Appendix C to clarify this.

00098-015: The text in Section C.6.12 of Appendix C has been corrected.

00098-016: The previous paragraph introduces the event-specific ADEC-approved remediation and restoration plans. However, the commentor points out that this introduction does not necessarily indicate that such ADEC-approved plans extend to final disposition of the spill debris and contaminated media. Clarifying language has been added to Section C.6.12 of Appendix C to clearly indicate that the ADEC-approved plans address the entire management of spill debris and contaminated media, including ultimate disposition. Similar clarifications are provided in Section 3.16-4.

00098-017: A summary of cumulative impacts has been added to the Executive Summary of the EIS.

00098-018: The text in Section 3.23.2.2 of the EIS has been changed to reflect information provided in the comment.

00098-019: The text in Section 3.23.3.5.1 of the EIS has been changed to reflect information provided in the comment.

00098-020: The text in Section 3.23.3.5.3 of the EIS has been changed to reflect information provided in the comment.

00098-021: The anticipated effects of TAPS ROW renewal on sociocultural systems are discussed in Section 4.3.21. The cumulative effects of TAPS renewal in the context of other sociocultural factors and anticipated actions along the right-of-way are discussed in Section 4.7.8.2. Both of these sections have been expanded to clarify the context of development associated with the TAPS.

The purpose of discussing suicides, substance abuse, and other problems is not to provide a full accounting of the many things that can affect and be affected by sociocultural change. Rather, it was to provide particularly striking evidence that Alaska Native sociocultural systems in a sense are out of balance and hence likely to be particularly sensitive to impacts. As continuation of the TAPS would continue some of the changes (influence of modern American society, need to participate in a cash economy) that have been linked to these problems, it seemed useful to note these particular concerns. That stated, the referenced section identified several positive effects of modernization in Alaska on Alaska Natives.

00098-022: Text has been added to the EIS in Sections 4.3.19.1.2 and 4.6.2.19.1 providing additional information on the assumptions used for the analysis of state and local government finances.

00098-023: The text in Section 3.23.2.2 of the EIS has been changed to reflect information provided in the comment.

00098-024: The text in Section 4.3.19.2.5 of the EIS has been changed to reflect information provided in the comment.

00098-025: Section 3.12.7.2.4, page 3.12-13, parg. 2, line 18

The phrase “resulting in a swampy area” will be deleted. However, it is not substituted by “possibly due to construction impacts” because the construction on the surface is unlikely to cause deep-seated warming. The reference “Keyes 2002” is replaced by “Michael Baker, Jr., Inc. 2001.”

00098-026: The text was changed to reflect the substance of the comment.

00098-027: While we recognize that the PWS RCAC has recommended that NPDES permit levels for the BWTF be reduced, the EIS correctly identifies that BWTF discharges are below current NPDES permit limits and that concentrations of total PAHs in sediments are below the sediment quality guidelines for marine sediments. While the future NPDES permit may include more strict limits on BTEX, the document correctly notes that historic operations have been within regulatory guidelines.

00098-028: The graph in Section 3.11.1.1 has been changed. The permit boxes have been removed and the legend has been fixed.

00098-029: The text in Section 4.3.8 has been revised.

00098-030: The sentence in Section 3.3 has been changed to "A thawed, loose granular soil deposit located below a groundwater table may become ..."

00098-031: The USGS reported by R.L. Wesson et al. chose two recurrence intervals: 500 years (non-exceedance of 10% in 50 years) and 2,500 years (non-exceedance of 2% in 50 years) in their analyses. A recurrence interval of 500 - 1000 years was used by the TAPS. The Wesson's results of peak ground acceleration (PGA) for the 2,500 years recurrence interval is used here for comparison because it would provide a more conservative estimate. Actually, the designed PGA used by the TAPS meets or exceeds the PGA found in the USGS report.

As the USGS's PGA is used for comparison, the effect of energy dissipation caused by soil and structures has been considered. The PGA value is divided by a factor of 2 before being compared with the design ground acceleration used by the TAPS. The results support the conclusion that the originally specified TAPS seismic design criteria met the seismic zoning criteria proposed by the USGS.

The text in Section 3.4 has been modified accordingly.

00098-032: Section 4.1.3.2.1 has been revised to incorporate that the automatic shut-down feature is intended to function in those instances when the operator is incapacitated.

00098-033: The text in Section 3.7.2.5 was revised per the comment.

00098-034: The text in Section 3.7.2.5 was revised to state that 3.8 million gallons of water were released in 1991. Reference to a maximum volume of release water was deleted.

00098-035: The text in Section 3.8 was revised per the comment.

00098-036: Sections 3.24, 4.3.20, 4.7.8.1, and other portions of the FEIS have been revised to discuss dual state and federal management of subsistence, and the various sources of impacts on subsistence in greater detail. Some of these changes are consistent with points in the comment.

00098-037: Text to resolve the confusion over Arctic char and Dolly Varden was added to Section 3.19.1 of the FEIS.

00098-038: Although it is important to discuss how security programs can enhance TAPS oil spill prevention and response strategies, for obvious reasons, a detailed discussion of all of the features that constitute the TAPS security program is not warranted. The text of the EIS (Section 4.1.4.2) mentions those aspects of the security program that are not covert and already obvious to anyone. Additional details of aspects of the security program that are not readily apparent do not need to be included to show the interface between security and spill prevention and response.

Nevertheless, a nonspecific statement has been added to the text to clearly indicate that additional security measures beyond those mentioned are, indeed, in place. As to the comment regarding the pump stations, the commentor is correct. The EIS fails to specifically mention security regarding either the pump stations or the pipeline itself. However, in the discussion in Section 4.1.4, security is alluded to as necessary elements to Part 2 of the oil discharge prevention and contingency plan required by Alaska regulation. Specifically, the text notes that Part 2 of the plan must provide a description of the schedule of inspection of the facility or operation as well as the existing and proposed means for detecting discharges, including surveillance schedules. However, in response to the comment, additional bullets have been added to Section 4.1.4.1 in the discussion regarding the four distinct phases of oil spill control. These bullets provide the interface between existing security programs and oil spill detection and response. As per the argument above, security measures are alluded to in a generic manner.

00098-039: The suggested correction has been made to Section 4.1.4.2.

00098-040: The text in Section 3.8 was revised as suggested by the comment.

00098-041: Section 3.10 discusses the current environment of Port Valdez and was organized in this manner to aid in a later discussion of potential impacts. No change was made.

00098-042: Section 3.11 is organized in this manner to aid in impact discussion later in the document. This section discusses the current environment of Port Valdez. No change was made to Section 3.11 in response to the comment.

00098-043: These are the units used in the original reference document. No change was made to the text in Section 3.10.

00098-044: Figure 3.11-1 has been corrected.

00098-045: The VMT NPDES permit was issued by US EPA but only after review and concurrence by ADEC. See also Section C.5. The reference to 705,399 refers only to sanitary waste treatment plant discharges. Appropriate changes have been made to the text in 3.16.

00098-046: The text in Section 3.16.4 has been revised appropriately.

00098-047: The text in Section 4.6.2.8.1 has been revised as suggested.

00098-048: The text in Section 3.8 was modified to indicate that the water withdrawn at Fairbanks is from an independent aquifer and is only used as a comparison of the total amount of water withdrawn. A similar change was made in the cumulative analysis (Section 4.7).

00098-049: The change was made in Section 3.13.1, as suggested.

00098-050: The change was made in Section 3.13.1, as suggested.

00098-051: The text in Section 3.13.1 has been revised.

00098-052: The change was made in Section 3.13.1.1, as suggested.

00098-053: We concur with the interpretation made in the comment with respect to the term “potential maximum emission levels” used in Section 4.3.9.1.

00098-054: The change was made in Section 4.3.9.1, as suggested.

00098-055: Revisions have been made to Section 4.4.4.6 as appropriate.

00098-056: The text in Section 4.3.19.3.1 of the EIS has been changed to reflect information provided in the comment.

00098-057: Text has been added to Sections 4.3.19 and 4.6.2.19 of the EIS to describe the impact of the two alternatives, especially during the early part of the renewal and non-renewal periods.

00098-058: The text in Section 4.3.19.3.2 of the EIS has been changed to reflect information provided in the comment.

00098-059: Text has been added to the EIS in Sections 4.3.19.1.2 and 4.6.2.19.1 providing additional information on the assumptions used for the analysis of state and local government finances.

00098-060: Forecasts for unemployment over the renewal period are estimated by the MAP Model and result from the determination of population and employment levels during the renewal period. The model also estimates migration levels in response to changes in relative incomes in the state compared to the nation as a whole. Structural changes that occur in the Alaskan economy are included in the forecasts made by the model for the other basic (non-petroleum) sectors in the economy of the state. These are reflected in the impacts on population, migration, employment and unemployment provided in the EIS.

00098-061: The text in Sections 4.3.19.1.2 and 4.6.2.19.1 of the EIS has been changed to reflect information provided in this comment.

00098-062: Text has been added to the EIS in Sections 4.3.19.1.2 and 4.6.2.19.1 providing additional information on the assumptions used for the analysis of state and local government finances.

00098-063: Text has been added to the EIS in Sections 4.3.19.1.2 and 4.6.2.19.1 providing additional information on the assumptions used for the analysis of state and local government finances.

00098-064: The text in Section 4.3.19.4.1 of the EIS has been changed to indicate the assumptions made in the analysis.

00098-065: The text in Section 4.3.19.4.2 of the EIS has been changed to indicate the assumptions made in the analysis.

00098-066: The primary purpose of Section 4.1.4 is to provide an overview of the strategy in place for response to accidental releases (of crude oil as well as other hazardous substances) and not to specifically discuss the regulatory drivers for that strategy. The Oil Pollution Act of 1990 (OPA) deserves a brief mention because of its unique influence on TAPS contingency planning. Specifically, the OPA dictates: specific elements to be included in federal contingency plans (see 40 CFR 300.210) and response plans for certain facilities and vessels (see 40 CFR 300.211), specific contingency plans for on-shore oil pipelines (see 49 CFR 194), and periodic contingency plan drills (see 40 CFR 300.212). Beside contingency planning and response strategies, the OPA also dictates the use of double-hulled tanker vessels in Prince William Sound. The impacts of double-hulled tankers are many and varied and extend well beyond issues relating to accidental release of crude oil. A brief paragraph introducing the changes brought about by the OPA has been added to Section 4.1.4. Double-hulled tankers are discussed in numerous sections in the EIS.

00098-067: Thank you for your comment. The symbol problem has been corrected in the referenced map in Section 4.1.4.1.

00098-068: An error occurred in the presentation of the data on net migration included in Table 4.3-17. The text and table in the EIS have been changed to correct this error.

00098-069: An error occurred in the presentation of the data on net migration included in Table 4.3-17. The text and table in the EIS have been changed to correct this error.

00098-070: An error occurred in the presentation of the data on net migration included in Table 4.3-17. The text and table in the EIS have been changed to correct this error.

00098-071: The text in Section 4.3.19.5 of the EIS has been changed to reflect information provided in the comment.

00098-072: An error occurred in the presentation of the data on net migration included in Table 4.3-17. The text and table in the EIS have been changed to correct this error.

00098-073: The text in Section 4.3.19.6 of the EIS has been changed to reflect information provided in the comment.

00098-074: Thank you for your comment.

00098-075: Section 4.3.19.7 has been revised to identify anticipated growth in personal income. However, it is important to note that impacts under the proposed action may be different from impacts under cumulative impacts, the latter also considering past, present, and reasonably foreseeable actions in addition to the proposed action.

00098-076: Section 4.3.19.7 has been revised to correct an erroneous statement about the decline in income.

00098-077: Access, land use, and trespass issues related to Native lands are addressed in the EIS in Section 4.3.23.1, “Land Use.” The BLM recognizes the concerns of Tribal governments and Native allottees related to land use issues adjacent to TAPS. Although these concerns do not directly affect renewal of the Federal Grant of Right-of-Way, the BLM will continue to work with these groups on these issues, as it has in the past.

00098-078: The text in Sections 4.3.19.1.2 and 4.6.2.19.1 and in Sections 4.3.24.1 and 4.6.2.24.1 has been modified to clarify the potential impacts on state recreation facilities.

00098-079: This comment refers to the summary table, Table 4.3-23, which has been deleted from the FEIS.

00098-080: Section 4.4.4.6.2 has been revised as appropriate.

00098-081: Section 4.4.4.6.2 has been revised as appropriate.

00098-082: Section 4.4.4.6.2 has been revised as appropriate.

00098-083: Permafrost aggradation will be much greater on the northern part of the pipeline. A sentence has been added to Section 4.6.2.2 to reflect that condition.

00098-084: The text "if necessary" has been added to Section 4.6.2.2.

00098-085: Because heavy equipment will be needed and brought into areas for removing all aboveground pipeline and mechanical refrigeration systems, transporting and moving the heavy equipment would likely destroy the vegetation covers that have grown near most of the workpads. Soil compaction is likely, and the permafrost is likely to be disturbed.

00098-086: The sentence mentioned in the comment refers to general compaction caused by moving heavy equipment and does not refer to slope stability.

00098-087: With the recent continuous warming trend in Alaska, previously frozen soils become loose and cycles of freeze and thaw increase. The processes of mass wasting would continue and expand. No change has been made to the text.

00098-088: Section 3.3 has been corrected, as appropriate.

The permafrost at MP735-736 has thawed over the last 25 years. Historical temperatures measured at Gulkana showed mean annual air temperature increased in the last 50 years. Temperature profiles measured at a depth of 50 ft showed a warming trend over a period from 1992 to 1995 (see Michael Baker Jr., Inc., 2001, MP735 Aboveground Pipeline Assessment) at two locations near MP 735, one near the VSM and one away from the VSM. If the warming resulted from the surface disturbance at the VSM, such warming would be less or none at the other location. On the contrary, larger warming was observed at the location away from the VSM than the one near the VSM in which thermosyphons were installed (see Michael Baker Jr., Inc., 2001, MP735 Aboveground Pipeline Assessment). Therefore, the warming in the subsurface at MP735 reflects the combined effects of surface disturbance in a swampy area subjected to a recent climatic warming trend in Alaska.

00098-089: The description is for the terrain of the area. Outwash fan is a geomorphic feature that is reflected in the area. A glacial till, which is suggested in the comment, is a term describing the nature of the geologic material and is not used in Section 3.2.6. However, in Section 3.3.1.6, a sentence has been modified to address the comment.

00098-090: VSM stability is obviously critical to TAPS integrity. As such, it is the focus of extensive monitoring and surveillance. Please see Section 4.3.2 of the FEIS (Soils and Permafrost) for additional information.

00098-091: The sentences referred to in the comment (Section 3.3.1.1) describe the conditions of the area without referring to any cause of the thawing.

As the area is near the southern end of permafrost, it is very sensitive to both surface disturbance and climatic change. It is questionable if the cleanup activity more than 20 years ago would alone produce the thawing. Given the general warming trend in Alaska (see Section 3.12.7) in the last several decades, it is unlikely that the described area is immune to the impact of the warming.

00098-092: Air temperature is expected to rise with the recent warming trend, resulting in an increase of freezing and thawing cycles. In cold regions, the number of freezing and thawing cycles is closely related to mass-wasting geologic processes; therefore, it is justified to use "would" in the sentence in Section 4.5.2.1.

00098-093: Changed the "would" to "may" in Section 4.3.1. No additional text has been changed because there is no foreseeable reason to assume that the warming trend in Alaska will stop or reverse.

00098-094: The appropriate change has been made to the text in Section 4.1.3.2.1.

00098-095: The suggested changes in Section 3.3.2.1 have not been made. The comment has not provided evidences that fire and mining activities have contributed to the degradation of permafrost of the cited sites. Nor has evidence been provided to support the claim that the surface disturbance could result in the deep-seated thawing of the sites.

The permafrost at MP735-736 has thawed over the last 25 years. Historical temperatures measured at Gulkana showed mean annual air temperature increased in the last 50 years. Temperature profiles measured at a depth of 50 ft showed a warming trend over a period from 1992 to 1995 (see Michael Baker Jr., Inc., 2001, MP735 Aboveground Pipeline Assessment) at two locations near MP 735, one near the VSM and one away from the VSM. If the warming resulted from the surface disturbance at the VSM, such warming would be less or none at the other location. On the contrary, larger warming was observed at the location away from the VSM than the one near the VSM in which thermosyphons were installed (see Michael Baker Jr., Inc., 2001, MP735 Aboveground Pipeline Assessment). Therefore, the warming in the subsurface at MP735 reflects the combined effects of surface disturbance in a swampy area subjected to a recent climatic warming trend in Alaska.

00098-096: After 25 years of the operation of the TAPS, creeping on some slopes has not stopped or stabilized. Deep-seat thawing has been observed on a few slopes (e.g., Treasure Creek Hill and Squirrel Creek Hill Slope). These are evidence that either the ongoing maintenance activities could not stop the degradation of the permafrost caused by the ground surface disturbance or factors, such as the warming trend in Alaska, may have contributed to the deep-seat thawing of the permafrost and creep. The warming trend in Alaska over several decades could have a deep, penetrating, warming effect on the permafrost and should not be ignored.

The text in Section 3.3 has been revised as appropriate.

The soil creep used here is referring to slow movement of geologic material on a slope without specifying the mechanisms of such movement. It is true the most common visible cause of soil creep on an undisturbed slope in cold regions was due to freezing and thawing, such as solifluction. Actually, creeping can occur in both cold and non-cold regions. Gravity force on a steep slope can cause creeping in weathered bedrocks or soils as soon as the down slope driving force is greater than the resistant force of the geologic material.

On the Treasure Creek slope, insulation material has been placed on the ground surface such that the soil creep caused by the freeze and thaw cycles of the active layers was greatly reduced. Because the soil creep continued for more than 25 years and deep-seated thawing was detected, the cause of the creep on the slope is unlikely to be the result of solifluction alone. On the other hand, degradation of permafrost can result in producing water and raising the temperature of the frozen soil. Both can reduce the mechanical strength of the soil and promote the soil creep movement under gravity force.

00098-097: The suggested change has been made to Section 4.2.2.6.4.

00098-098: The point intended to be made here is that slope deterioration can also result in VSM movement or destabilization. If that were to occur, VSM repair or replacements may be necessary. If so, impacts from related construction (i.e. stabilization or removal/replacement of a VSM) may have impacts of even greater magnitude than the impact associated with slope repair alone. The language suggested in this comment is consistent with this point. An appropriate change has been made to the text in Section 4.2.2.4.1.

00098-099: The word "temporarily" has been added at the end of the sentence.

00098-100: It is a general statement referring to the thawing effect on permafrost. The effect can be found near workpads, access roads, thaw bulbs, etc. An example of settlement caused by the thaw bulb is at the Atigun Pass near MP 166. The photos referenced were used for workpads and not for aboveground or buried pipe. The sentence in Section 3.3.2.2, "The thawing can induce both subsidence of the ground surface ..." has been changed to "Thawing of the permafrost can induce both subsidence ..."

00098-101: The typographical error in Section 3.2.10 has been corrected.

00098-102: The text in section 3.2.9 has been revised.

00098-103: The text in Section 1.3 has been changed from "spruce-fir" to "spruce-birch."

00098-104: The discussion in Section 4.3.17.2 does relate specifically to caribou, and states that the avoidance of roads and facilities during the calving period applies only to some caribou. No population-level impacts due to avoidance occur, especially since the area is too wet to be a calving area.

00098-105: The text in Section 3.11.3.1 states that PWS was "generally characterized as 'pristine," and the text has not been changed.

00098-106: The color coding in Map 3.18-1 has been changed to better differentiate Coastal Forest and Boreal Forest.

00098-107: Figure 3.18-2 has been deleted.

00098-108: The reference changes have been made in Section 3.21.2 as suggested.

00098-109: Reference citation changes have been made as suggested (see Section 3.21.2).

00098-110: The reference change has been made as suggested (see Section 3.21.2).

00098-111: The reference call-out in Section 3.21.2 has been changed as suggested.

00098-112: The Garshelis and Johnson reference cited in Section 3.22.3.5 has been updated in the FEIS.

00098-113: A change in the reference citation in Section 4.3.17.2 has been made as suggested.

00098-114: Information from Wiens et al. 1996 (and Ford et al. 1996) has been added to the discussion on the Exxon Valdez oil spill (EVOS) on birds. It was not feasible to cite all the reports that have been prepared on the impacts of the EVOS, or oil spills in general, on birds. The references used in the EIS are sufficient to support the assessments of the immediate and long-lasting impacts of oil spills to ecological resources presented in Sections 4.4.4.9 thru 4.4.4.12.0

00098-115: Information from Wiens et al. 1996 (and Ford et al. 1996) has been added to the discussion on the Exxon Valdez oil spill (EVOS) on birds. It was not feasible to cite all the reports that have been prepared on the impacts of the EVOS, or oil spills in general, on birds. The references used in the EIS are sufficient to support the assessments of the immediate and long-lasting impacts of oil spills to ecological resources presented in Sections 4.4.4.9 thru 4.4.4.12.

00098-116: The new reference by Cronin et al. (in press) provides further evidence that the caribou herds represent a single interbreeding population. However, because this publication is in press, and is not readily available to readers of the EIS, it has not been cited in the EIS. The EIS already states that the herds are not totally independent or reproductively isolated.

00098-117: The text in Section 3.21.1.7 has been revised as suggested.

00098-118: The Section 3.21.2 discussion on moose in the North Slope has been modified to include information from Carol (2002) that the population is now increasing in size.

00098-119: The statement in Section 3.21.2 has been modified as suggested.

00098-120: Text has been added to Section 3.22.2.1 that includes this reference.

00098-121: The text in Section 3.22.1.2 has been changed as suggested.

00098-122: Section 3.22.3.5 text has been modified to describe the current status of the sea otter population.

00098-123: Section 4.7.8.1 has been revised to discuss subsistence impacts of the Exxon Valdez oil spill in greater detail. The key issue seems to be persisting effects of the spill, regardless of the ultimate reasons. Despite pronouncements of food safety, perceived problems with subsistence resources continued several years after the spill.

00098-124: Section 4.7.8.1 has been revised to discuss subsistence impacts of the Exxon Valdez oil spill in greater detail. The main issue seems to be impacts on subsistence behavior, regardless of the ultimate causes or reasons. Available data indicate that shifts in subsistence behavior continued into the late 1990s based on perceived damage to subsistence resources.

00098-125: The 1994-1995 estimates of 7,500 to 10,000 wolves has been added to the text. Harvest summaries were provided to give the reader a general indication of harvests that occur in the GMUs crossed by the ROW compared to state-wide harvest totals. Thus, it was decided that presenting the recent harvest statistics would be sufficient. It should be mentioned that Tables 3.21-2 and 3.21-3 have been updated to provide 2000-2001 harvest data rather than the 1999-2000 data presented in the DEIS.

00098-126: The 1994-1995 estimates of 7,500 to 10,000 wolves has been added to the text. Harvest summaries were provided to give the reader a general indication of harvests that occur in the GMUs crossed by the ROW compared to state-wide harvest totals. Thus, it was decided that presenting the recent harvest statistics would be sufficient. It should be mentioned that Tables 3.21-2 and 3.21-3 have been updated to provide 2000-2001 harvest data rather than the 1999-2000 data presented in the DEIS.

00098-127: The text in Section 4.4.4.3.2 has been corrected per the comment.

00098-128: Text has been added to Section 4.4.4.3.2 to state that the response times are “average” values.

00098-129: Where possible, tables have been used in the EIS to facilitate readability. When information needed for a section appeared in a previous table in another section of the report, the table was not repeated to avoid redundancy.

00098-130: The text in Section 4.4.4.3.2 was corrected to call out Table 4.4-19.

00098-131: Callout to Table 4.4-20 added per comment.

00098-132: Table 4.4-22 lists the segments of the pipeline that are below the ground. MP 736-800 is one of those segments. The text correctly references the Chugach Range as occurring from MP 720-800. The maximum release volume for the entire Chugach Range would occur at MP 741. No change in the text is required.

00098-133: Where possible, tables have been used to facilitate readability, particularly when many parameters are discussed. However, a summary table is not required for these two paragraphs in Section 4.4.4.5.

00098-134: The text in Section 4.4.4.5.4 has been changed to address this comment.

00098-135: The text in Section 4.4.4.6.2 has been revised to define hazardous air pollutants. The term is also defined in the Glossary.

00098-136: A footnote has been added where the term “meteorological conditions” appears in Section 4.4.4.6.3.

00098-137: Thank you for your comments. The suggested updates provided in subsequent comments are being considered for inclusion into Section 4.1.4.3.

00098-138: Appropriate changes have been made to the text in Section 4.1.4.3.

00098-139: Appropriate changes have been made to the text in Section 4.1.4.3.

00098-140: Thank you for your comment.

00098-141: The common names used for birds in the EIS are those accepted by the American Ornithologists' Union. Thus, the authors of the EIS did not believe the use of scientific names was necessary. A parenthetical statement has been added to the first call-out of the long-tailed duck (Section 3.20.1.1) to inform the readers that it was previously known as the oldsquaw.

Information on peregrine falcon zones of restricted activity (ZRAs) that occur near the ROW has been added to Section 3.20.1.2.

00098-142: The text in Section 3.21.1.1 has been revised as suggested.

00098-143: The TAPS Owners 2001a citation concerning the DHCMA in Section 3.21.1.1 has been replaced with ADF&G (2002).

00098-144: A footnote has been added to Tables 3.21-2 and 3.21-3 explaining what the harvest numbers entail. Also, the information in the tables has been updated for harvest year 2000-2001. The footnote for the tables provides the harvest year.

00098-145: The definition of caribou herd has been moved from the footnote to the main text of Section 3.21.1.2.

00098-146: A citation for the seven phases of caribou activities has been added to Section 3.21.1.2.

00098-147: The editorial change to Section 3.21.1.2 has been made as suggested.

00098-148: The caribou herd size estimates were obtained from the ADF&G caribou herd map that also listed the herd sizes as of the year 2000. This information was assumed to be sufficient for the relative comparison of herds that are crossed by the ROW. A footnote has been added to Table 3.21-3 explaining what the harvest numbers include. It should be noted that the table has been updated with harvest year 2000-2001 data replacing the harvest year 1999-2000 data.

00098-149: A change has been made to the text in Section 4.2.2.5.1.

00098-150: Instrument pig runs will gather data that can support decisions to repair pipeline segments. However, the data may also identify situations where corrosion has not advanced to a point where repair or replacement is required, but rather, where the addition of corrosion control systems, or adjustments to existing systems, is warranted. Therefore, the text in Section 4.1.3.2.1 has not been changed not to replace “also need corrosion control” with “also need repair and or corrosion

00098-151: The complex environmental interrelationships associated with the proposed renewal of the TAPS right-of-way coupled with the diversity of reader interests and needs require the assembly of large amounts of information in the EIS. Cross-referencing is a useful tool to avoid duplication while enabling readers with diverse needs to access sections of interest to them.

00098-152: The information in this paragraph is actually already summarized in the tables in Section 4.4.1. A reference to the appropriate tables has been added to the paragraph.

00098-153: This paragraph gives information on an unlikely category spill of 450 bbl at the Valdez Marine Terminal. The volume of this spill is much lower than that for the 4,900 bbl spill in the likely category, and the impacts are much lower (which is stated in the text). Therefore, it was considered to be unnecessary to include the data for this spill in Table 4.4-30.

00098-154: Text has been added to Section 4.4.4.9.

00098-155: Text has been added to Section 4.4.4.9 to define AO and SPC. These terms are also defined in Acronyms and Abbreviations.

00098-156: Spill response activities, including the intentional hazing of wildlife, would temporarily disturb and displace wildlife. It can be inferred from the discussion in Section 4.4.4.11 that individuals displaced from the spill area would not be killed from oiling. With decreased human activity following the initial spill response, wildlife would be able to traverse freely through or occupy the spill area.

00098-157: A footnote has been added to the table in Section 4.4.4.12 providing a key to terms.

00098-158: The Section 4.4.4.12 text has been changed as suggested.

00098-159: The text in Section 4.4.4.13.3 of the EIS has been changed to reflect information provided in the comment.

00098-160: Acronyms and Abbreviations, including ACEC, Areas of Critical Environmental Concern, are defined in a list of Notations at the beginning of the EIS. In this way, they are readily available for reference, regardless of where the reader may encounter them.

00098-161: The number of rivers and streams crossed by TAPS is appropriately mentioned in Section 3.7, which describes the affected environment for surface water resources.

00098-162: The text in Section 4.7.4.1.2 has been corrected.

00098-163: The acronym has been spelled out in the FEIS in Section 4.7.4.7.2. It is also defined in Acronyms and Abbreviations.

00098-164: The word "proposed" has been deleted in Table 4.7-4 and on page 4.7-51 of the FEIS.

00098-165: The footnote in Table 4.7-7 has been changed to refer to Table 4.7-2.

00098-166: In Section 4.7.6.7 the text has been revised to define AQRV. This acronym is also defined in Acronyms and Abbreviations.

00098-167: The acronym has been defined in the Section 4.7.6.10.1. It is also defined in Acronyms and Abbreviations.

00098-168: The acronym has been defined in Section 4.7.6.10.1.

00098-169: The acronym has been defined in Section 4.7.6.10.3. It is also defined in Acronyms and Abbreviations.

00098-170: The units uR/h stand for microrem per hour, which was added to the text in Section 4.7.6.11.1. Units are also defined in Acronyms and Abbreviations.

00098-171: As stated in the Glossary and in Acronyms and Abbreviations, FTE stands for full-time equivalent. The text in Section 4.7.6.11.1 has been revised to also define the acronym.

00098-172: The term in Section 4.7.6.11.2 has been corrected.

00098-173: The text in Section 4.7.7.3.1 has been corrected.

00098-174: The insert has been added to Section 4.7.7.3.5 as suggested.

00098-175: A reference has been provided for the statement (Section 4.7.7.3.5), and the statement has been modified as suggested.

00098-176: The sentence has been revised in Section 4.7.7.3.5 as suggested.

00098-177: The text in Section 4.7.7.4 has been modified as suggested.

00098-178: The text in Section 4.7.7.4 has been modified as suggested.

00098-179: The text in Section 4.7.7.4 has been modified as suggested.

00098-180: The referenced text in Section 4.7.7.4 has not been changed. The text accurately depicts what was expressed in the literature citation and the suggested modification would not alter the conclusions.

00098-181: The purpose of the EIS is to analyze and present the impacts associated with the proposed action and its alternatives. Benchmarking and comparisons with other pipelines, although useful, do not provide an accurate representation of the impacts associated with TAPS ROW renewal. The approach taken in the EIS has been to compare the impacts with applicable standards and regulations, which more accurately places the estimated impacts in the context for the decision-maker.

00098-182: The text in Section 4.4.1.1.1 and Map 4.4-1 have been modified to account for the two greater than 10,000 barrels.

00098-183: Text has been added to Section 4.7.8.3 of the FEIS providing additional sources of information about the impact of the Exxon Valdez oil spill (EVOS) on communities, including intangible impacts, such as psychological stress, and in the fisheries, recreation, and tourism industries in the Prince William Sound area. In addition, compressed overviews of selected impacts of the EVOS have been added to Sections 4.7.8.1 and 4.7.8.2.

00098-184: Additional text has been added to Section 4.4.4.13.1 to clarify the issue. Captions in Table 4.4-38 have been simplified, and the reference to footnote ‘c’ has been deleted.

00098-185: Additional text has been added to Section 4.4.4.13.1 to clarify the issue. Captions in Table 4.4-38 have been simplified, and the reference to footnote ‘c’ has been deleted.

00098-186: The text in Section 4.4.4.13.2 of the EIS has been changed to reflect information provided in the comment.

00098-187: The text in Section 4.4.4.13.2 of the EIS has been changed to reflect information provided in the comment.

00098-188: The text in Section 4.5.2.19 of the EIS has been changed to reflect information provided in the comment.

00098-189: The text in the EIS has been changed to reflect information provided in the comment.

00098-190: The text in Section 4.6.2.19.1 of the EIS has been changed to reflect information provided in the comment.

00098-191: Text has been added to the EIS in Sections 4.3.19.1.2 and 4.6.2.19.1 providing additional information on the assumptions used for the analysis of state and local government finances.

00098-192: Text has been added to the EIS in Sections 4.3.19.1.2 and 4.6.2.19.1 providing additional information on the assumptions used for the analysis of state and local government finances.

00098-193: Text has been added to the EIS in Sections 4.3.19.1.2 and 4.6.2.19.1 providing additional information on the assumptions used for the analysis of state and local government finances.

00098-194: The text in the EIS has been changed to reflect information provided in the comment. See Sections 4.3.19.3.2 and 4.6.2.19.3 and Tables 4.3-8 and 4.6-13.

00098-195: Section 4.6.2.19.3 and Table 4.6-16 of the EIS have been changed to reflect information provided in the comment.

00098-196: Text has been added to the EIS in Sections 4.3.19.1.2 and 4.6.2.19.1 providing additional information on the assumptions used for the analysis of state and local government finances.

00098-197: Text has been added to the EIS in Sections 4.3.19.1.2 and 4.6.2.19.1 providing additional information on the assumptions used for the analysis of state and local government finances.

00098-198: Text has been added to the EIS in Sections 4.3.19.1.2 and 4.6.2.19.1 providing additional information on the assumptions used for the analysis of state and local government finances.

00098-199: Text has been added to the EIS in Sections 4.3.19.1.2 and 4.6.2.19.1 providing additional information on the assumptions used for the analysis of state and local government finances.

00098-200: The text in Section 4.6.2.19.4 of the EIS has been changed to reflect information provided in the comment.

00098-201: Text has been added to Sections 4.3 and 4.6 of the EIS to describe the impact of the two alternatives, especially during the early part of the renewal and non-renewal periods.

00098-202: The text in Section 4.6.2.19.4 of the EIS has been changed to reflect information provided in the comment.

00098-203: The text in Section 4.6.2.19.4 of the EIS has been changed to reflect information provided in the comment.

00098-204: Text has been added to Sections 4.3 and 4.6 of the EIS to describe the impact of the two alternatives, especially during the early part of the renewal and non-renewal periods.

00098-205: Text has been added to Sections 4.3 and 4.6 of the EIS to describe the impact of the two alternatives, especially during the early part of the renewal and non-renewal periods.

00098-206: Text has been added to Sections 4.3 and 4.6 of the EIS to describe the impact of the two alternatives, especially during the early part of the renewal and non-renewal periods.

00098-207: Text has been added to the EIS in Sections 4.3.19.1.2 and 4.6.2.19.1 providing additional information on the assumptions used for the analysis of state and local government finances.

00098-208: Thank you for your comment. A continuation of fiscal problems in Alaska likely would create a decision making environment where expenditures would have to be reviewed carefully. Without the North Slope oil fields, maintenance of the Dalton Highway could well become a lessened priority.

00098-209: Sections 4.6.2.20 and 4.6.2.21 both have been modified, in part in response to changes in the economic analysis under no action to maintain consistency with that section.

00098-210: Table 4.6-24 has been revised to more accurately reflect the findings of the economic analysis under the no-action alternative.

00098-211: Section 4.6.2.21 notes likely reductions in state expenditures on various public programs under the no-action alternative. Among the programs that may suffer is education, although how more limited revenues would be distributed is uncertain.

00098-212: Section 4.6.2.21 notes that reduced revenues under the no-action alternative likely would jeopardize certain state-funded programs. Education would be among the programs at risk, though available information does not provide clear indications of the degree to which it would be adversely affected.

00098-213: Section 4.6.2.20 has been revised to make it consistent with the revised economic analysis in Section 4.6.2.19.

00098-214: Section 4.7.8.2 has been revised to clarify the discussion of infant mortality and to correct the percentage of high school graduation in the North Slope Borough. The suicide rates reported in the document cited in the EIS and the document shown on the graph cited by the comment use different base years for age-adjustments (1940 for the former, 2000 for the latter). Section 4.7.8.2 has been revised to note this discrepancy.

Since the context discussed here is oil development and the TAPS using a baseline of 1940 or 1950 health statistics would probably be going too far back for a construction project dating from 1974 to 1977.

Section 4.7.8.2 discussed cumulative effects and places the projected consequences of TAPS ROW renewal in context. It is appropriate to point out the benefits in public health that petroleum development has engendered as well as negative consequences to traditional lifeways. It is up to the affected populations and government decision makers, not the authors of the EIS, to decide whether benefits outweigh costs.

00098-215: The text regarding the no action alternative in Section 4.7.8.2 has been revised to give additional emphasis to the negative economic consequences of no action.

00098-216: The text in Section 4.7.8.3 has been changed to reflect information provided in the comment.

00098-217: Additional text has been added to Section 4.7.8.3 describing in more detail the impact of the No-Action alternative.

00098-218: A buried pipeline, while not at the surface, still has visual impact, primarily from the effects of vegetation removal from construction and ongoing maintenance.

00098-219: A natural gas pipeline could operate independently of the TAPS if economic conditions favored natural gas production on the North Slope. While natural gas is a by-product of petroleum production, petroleum production was not viewed as necessary for exploitation of the North Slope's natural gas reserves. For this reason, a natural gas pipeline was included in the list of other actions for the no-action (no TAPS renewal) alternative (see Section 4.7.8.6.3).

00098-220: Section 4.6.2.25 has been revised to provide a more thorough evaluation of the no-action cumulative case for environmental justice.

00098-221: The summary has been revised to more fully present the cumulative impacts analysis. Alaska contains substantial reserves of natural gas, and there are numerous proposals to develop those reserves. It is potentially possible, depending on economics, to produce natural gas without the operation of the TAPS. A natural gas pipeline is a separate proposal and would occupy a parallel, but separate, right-of-way from TAPS. For this reason, the analysis of the cumulative impacts of no action (not to renew TAPS) includes a natural gas pipeline (Section 4.7.9).

00098-222: The referenced table has been revised to more clearly identify cumulative impacts.

00098-223: The referenced text in Section 3.1.2.2.2 has been changed as suggested.

00098-224: This exploration well has been added to the appropriate maps for Map 4.7-5.

00098-225: The referenced text in Section 4.7.6.11.2 has been revised.

00098-226: The referenced text in Section 4.7.6.11.3 has been revised.

00098-227: The references and wording in Section 4.7.7.3.2 have been changed as suggested.

00098-228: Text has been added to Section 4.7.7.2.3 to indicate that the Alaska Department of Public Safety (State Fish and Wildlife Protection) also enforces fish and game regulations.

00098-229: The numbers of caribou in the Central Arctic herd have been updated in Section 4.7.7.3.4 based on the suggested references.

00098-230: Due to the uncertainty concerning how many terrestrial mammals may have died due to the Exxon Valdez oil spill, the MMS (1998) predictions have been deleted from Section 4.7.7.3.5. References for the loss estimates for seabirds and eagles have been added.

00098-231: The text in Section 4.7.7.4 has been modified to include: (1) a baseline ranking definition for species listed as depleted under the MMPA; (2) explanation that existing baseline conditions could be result from both TAPS and non-TAPS activities; (3) the existing baseline condition for the Pacific walrus was changed from minor to negligible based on existing population information; (4) the existing baseline condition for the sea otter was changed from moderate to minor because of its lack of listing as either depleted or threatened; and (5) the footnote identifying the stock of beluga whales was corrected.

No changes were made to the ranking definitions for the effects of future actions and existing baseline conditions, because the same definitions apply to both.

00098-232: The referenced text in Section 3.1.2.1.1 has been changed as suggested.

00098-233: The referenced text in Section 3.1.2.1.1 has been corrected.

00098-234: The referenced text in Section 3.1.2.1.2 has been corrected.

00098-235: The referenced text in Section 3.1.2.2.1 has been revised to clarify that the SERVS is responsible for safe transit of tankers from VMT to 17 miles outside of the Hinchinbrook Entrance.

00098-236: The Prince William Sound Oil Discharge Prevention and Contingency Plan incorporates the delineation of three "zones" with PWS as defined by the Alaska Regional Response Team (ARRT) (see SID #1, Section 7.4.1). Under provisions of that plan (Section 5.3), the Incident Commander is authorized to make the decision regarding the use of dispersants; however, depending on the zone that is impacted, formal notice must be given to both the Federal and State On-Scene Coordinators of the intention to use dispersants. When the spill impacts Zone 1, the Federal On-Scene Coordinator (FOSC) is unilaterally authorized to approve the use of dispersants. However, when the spill threatens Zones 2 or 3, the FOSC must receive approval from the EPA representative to the ARRT and the Alaska Department of Environmental Conservation (ADEC) (see SID #1, Section 7.4.1) before granting such approval. The suggested change has been made to the text in Section 4.1.4.2. Also, we note that the subsequent section discusses contingency plans for releases of oil to Prince William Sound as a result of tanker accidents, but does not indicate the role of the FOSC regarding the use of dispersants; the text has been modified accordingly.

00098-237: Although flare stacks exist at the pump stations, there is no flare stack at the VMT. The sentence should have referred to the "waste gas incinerator," rather than to a flare stack. A correction to Section 4.2.2.2 has been made.

00098-238: No text change has been made as no hanging or incomplete sentences were found in Section 4.2.2.6.3.

00098-239: The information in Table 4.2-1 was taken directly from the reference, "Environmental Report for Trans-Alaska Pipeline System Right-of-Way Renewal, Potential TAPS Upgrades" (May 2002). The new pump modules referred to in this comment are represented as Planned Upgrades in Table 4.2-1. "New electric switchgear" is represented in the "To Be Added" column. No changes are being made to the text or the table.

00098-240: The terms "transfer legs" and "transfer arms" are both in common use. However, we have no objections to making the requested change. Also, the comment correctly states that Berth 3 does not have a vapor control system. Appropriate changes have been made to the text in Section 4.2.2.6.3.

00098-241: Additional clarification regarding the fate of the fiber optic cable has been added to the text in Section 4.2.4.2.

00098-242: The text in Section 4.4.4 has been changed to reflect the reviewer's suggested revision.

00098-243: The text in Section 4.4.3 has been modified by replacing "Freon" with "Halon."

00098-244: The text has been modified to read: "Wall thickness is graduated from 1 1/8 in. around the steel bottom ring, decreasing to ½ in. at the top ring." These dimensions are reported as Pipeline Facts at http://www.alyeska-pipe.com/Pipelinefacts/MarineTerminals.html.

00098-245: The text in Section 4.4.4.4.2 was revised as per the comment..

00098-246: The text was revised to indicate that there have been some minor noncompliances that were self-reported by APSC.

00098-247: The text in Section 3.8 was revised per the comment.

00098-248: We disagree with the comment's contention that modifications to the line-wide NPDES permit would not occur simply on the basis of an increase in the volume of hydrostatic test waters. Under Section VI, General Requirements, Subsection C, Planned Changes, the current line-wide NPDES permit requires APSC to provide "...notice to the Director (of EPA) and ADEC as soon as possible of any planned physical alterations or additions to the permitted activities in this permit. Notice is required only when:

1) The alteration or addition to a permitted activity may meet one of the criteria for determining whether the activity is a new source as determined in 40 CFR 122.29(b); or

2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Part VI.A.1." (It is clear from the permit's construction that this should read Part II.A.1)

The activities under consideration here are not substantively different from current activities addressed under the existing permit, and it is therefore unlikely that the permitting authority would construe the changes to hydrostatic test water volumes to constitute a new source as defined in 40 CFR 122.29(b) and that condition 1) above would have little effect. If APSC can successfully demonstrate in such a notice that no new pollutants would be introduced or that quantities of pollutants released would not increase, then no modifications would likely occur to the existing permit. However, condition VI C of the current permit preserves the opportunity for regulatory authorities to review planned actions in detail for their potential impacts before making decisions regarding the permit. The possible outcomes of such a review include: (1) no change to the existing permit; (2) a possible amendment to the existing permit by the addition of conditions and limitations that would apply to the management of hydrostatic test waters related to upgrade activities; or (3) a requirement for APSC to apply for a new permit that would be subject to public review and comment.

Appropriate language has been added to the text of Section 4.2.2.6.3 and also to Section C.5 to discuss an ADEC-issued general permit that would apply to discharge of hydrostatic test waters not specifically governed by the APSC individual NPDES permit (Wastewater General Permit No. 9940-DB003).

00098-249: The text in Section 4.3.6.1 was reworded as requested in the comment.

00098-250: The text in Section 4.3.6.1 has been modified.

00098-251: The text in Section 4.3.6.1 has been revised per the comment.

00098-252: "Surface water regime" was changed to "surface water quality" in Section 3.7 per the comment.

00098-253: The text in Section 3.7.1.3 has been revised to state that the pipeline has both elevated and buried crossings in this region.

00098-254: The text in Section 3.7.2.1 has been revised.

00098-255: Thank you for your comment.

00098-256: The text in Section 3.7.2.1 has been revised, as suggested in the comment.

00098-257: The text in Section 3.7.2.1 has bee revised to address part of the comment. Because impacts produced by construction and the first couple of years of operation contributed to the historical impacts of the pipeline, the statement is retained.

00098-258: The text in Section 3.7.2.2 has been revised per the comment.

00098-259: Local ponding of water can be considered a form of flooding. Therefore, it was discussed in Section 3.7.2.2. No text change is needed.

00098-260: Thank you for the clarification. Appropriate changes have been made to the text in Section 4.1.2.5.

00098-261: The phrase "affects the hydraulic regimens of river basins" was used by Slaughter to describe the collective effects of aufeis formation. In his monograph, Slaughter describes the research experiences of others who observed that aufeis essentially represents water in solid state storage. As such, this volume of water is no longer contributing to stream flows and is otherwise diverted from its normal movement in surficial materials. Aufeis water, then, is effectively subtracted from down-gradient water transport. Further, accumulation of aufeis will alter runoff patterns during spring melts. Thus it can be argued that the hydraulic characteristics of river basins within which aufeis formation occurs are changed down-gradient of such formations. Nevertheless, the text in Section 4.1.3.2.1 has been changed to provide clarification.

00098-262: A reference for the Rosgen technique has been added to Section 4.1.3.2.1. One notable characteristic of this technique is that it requires in-stream activities. Language to that effect has been added to the text.

00098-263: The text in Section 4.3.6.2 has been revised for clarity, stressing a continued need for surveillance and maintenance, as required. The reference to new work done in response to flooding was deleted.

00098-264: The referenced text in Section 4.3.6.2 has been deleted per the comment.

00098-265: Text has been added in Section 4.4.4.3 to state that ice also confounds spill response and effectiveness. Although Gulkana bridge structure might protect the pipeline, a guillotine break is conservatively assumed for the calculations. No additional change of text is required.

00098-266: The text in Section 4.5.2.6 has been deleted per the comment.

00098-267: Section 3.13.1.1 has been revised per the comment.

00098-268: The emissions data listed in Table 3.13-5 were estimated on the basis of (1) vehicle-miles-traveled (VMT) data provided by APSC for various types of vehicles assigned to a specific TAPS facility (or city) or to operate between two specific TAPS facilities, a TAPS facility and a city, or two cities; and (2) EPA emission factors for mobile sources (Hardesty 2001—see reference in Section 3.30 of the FEIS).

00098-269: The text in Section 3.13.1.2 has been revised.

00098-270: The citation in Section 3.13.2.1 has been corrected.

00098-271: Section 3.13.2.1 has been modified.

00098-272: As their name implies, “overpressure vents” are not expected to be continuous sources of VOC release, but are necessary safety devices that may occasionally open to release VOCs. The existence or absence of ambient monitoring data is irrelevant to the statement that the overpressure vents have the potential to release VOCs; however, such monitoring data (or alternative data on actual measurement of releases from each vent) would be required to quantify the impacts of such VOC releases. Since Section 4.2.2.1 is providing only a qualitative discussion of impacts, no changes to the text have been made in response to this portion of the comment.

00098-273: We cannot support the apparent contention in this comment that air quality impacts do not exist if they are not measurable beyond the TAPS ROW. The TAPS ROW is a part of the affected environment. The facts are irrefutable: pollutants (by-products of fossil fuel combustion as well as particulates) are released to the air as a result of this anthropogenic activity (valve vaulting). However, we are willing to entertain the possibility that this comment attempts to make a deeper point but in doing so fails to recognize the distinction between an impacting factor and the subsequent environmental impact or consequence. In response to that presumption, we point out that the purpose of Section 4.2.2.6.2 is to introduce the impacting factors associated with readily anticipated activities that constitute routine TAPS operations and with credible off-normal events. These impacting factors form the basis for environmental consequence analyses appearing later in the EIS.

00098-274: The text in Section 4.2.3 has been revised. However, although carbon dioxide is not a regulated pollutant, it clearly meets the definition of pollutant, and other portions of the EIS discuss its role in climate change mechanisms (See Section 3.13.1.3).

00098-275: A sentence has been added to Section 4.7.6.11.2 stating that 10% of the ambient VOC level in the city of Valdez was attributable to the Valdez Marine Terminal. However, this section on cumulative impacts is intended to address impacts from important TAPS-associated contaminants overall, including other possible exposure sources. A very important additional source of benzene exposures is from motorized vehicle exhaust. The text indicates that these exhausts contribute about 82% of all benzene emissions, and that the population of Valdez is projected to increase 60% over the current level over the next 30 years. Some additional information has been added to indicate that the ambient benzene level in Valdez was somewhat high in 1991 at the time of the Valdez Air Health Study, and that if automobile traffic increases markedly over the next 30 years, additional emissions controls on mobile and/or point sources might be needed.

00098-276: The 15-minute TEEL values have been labeled in the tables; footnote e explains that these are for comparison with 15-minute average values and therefore may be underprotective for comparison with modeled 1-hour ambient concentrations.

The referenced EPA document was reviewed, and no mention of impact scaling factors was found in that document. However, it is unlikely that ambient guidelines for PSD would be applicable to the short-term air concentrations estimated in association with an oil or hazardous substance spill. The pollutant concentrations would dissipate quickly (within 24 hours or less, depending on the spill duration) after a spill, so potential adverse health impacts from short-term inhalation exposures are being assessed. The Emergency Response Planning Guidelines were expressly developed to aid in assessment of short-term accidental exposures, and are appropriate for the accident impact assessment for human health and safety.

For chemicals without ERPG values, the use of TEELs as comparison values is also useful, because TEELs were developed for essentially the same reason as the ERPGs, but using somewhat less rigorous review requirements. This has allowed the development of about 2000

TEEL values using best available toxicity data, as opposed to only about 100 ERPGs developed to date. To roughly account for the difference in exposure time assumption between TEELs (derived for comparison with 15 minute time weighted averages) and the modeled 1-hour maximum ambient concentration, the TEEL values can be divided by 4. However, this adjustment of the TEEL values increases the uncertainty in the assessment, and may result in overestimates of the impact distances. A discussion of the change in the maximum impact distance after adjusting the TEEL values down by a factor of 4 has been added to the text (e.g., the impact distance could increase from 4 to 13 km), along with a statement that the larger

00098-277: The alternative to not renew the federal grant of right-of-way receives extensive analysis in the EIS. For example, please see Section 4.6, No-Action Alternative Analysis. A description of the termination activities that would be required and a general description of what would be involved in implementing a decision to not renew the federal grant are used for the purpose of the analysis in this EIS. However, if the grant is not renewed a more specific and detailed proposal for dismantling, removal, and restoration of the TAPS would have to be submitted by the TAPS owners and that would become the subject of a separate EIS. Until that happens, it remains necessary to acknowledge speculation regarding the details of the termination activities.

00098-278: The list of Acronyms and Abbreviations at page xxix correctly defines AO as the Authorized Officer of the Joint Pipeline Office. The role of the JPO is to oversee the operations of TAPS (See Section 4.1.1, "JPO Oversight.") As stated in Section 1.1, "Purpose and Need," the application to renew the federal grant of right-of-way was received by the Bureau of Land Management, U.S. Department of the Interior. The same section goes on to point out that the Secretary of the Interior or agency head is authorized to renew the federal grant.

00098-279: Indeed, the primary purpose of this stipulation is to provide adequate protection for pipeline structural members. A change has been made in Section 4.1.6 to exactly incorporate language from Stipulation 3.6.1.1.1.4.

00098-280: The referenced EPA document was reviewed, and no mention of impact scaling factors was found in that document. However, it is unlikely that ambient guidelines for PSD would be applicable to the short-term air concentrations estimated in association with an oil or hazardous substance spill. The pollutant concentrations would dissipate quickly (within 24 hours or less, depending on the spill duration) after a spill, so potential adverse health impacts from short-term inhalation exposures are being assessed.

The different comparison levels are appropriate because the fire durations (roughly corresponding to potential exposure durations) are different. Potential for health impacts from inhalation of contaminants from the 30-minute pipeline fire can be assessed by comparison with the short-term ERPG or TEEL values. However, it is more appropriate to compare the 8-hr average exposures from a Valdez Marine Terminal fire with the 8 to 24 hr NAAQS or with TLVs, which are much lower guideline values. In Table 4.4-33, (Near-Field Impacts), the concentrations associated with a VMT fire are now compared with NAAQS and TLVs. Information has been also been added to the text and the table footnotes to explain the rationale for use of differing comparison levels.

00098-281: The Denali Fault branches into two strands near MP 589: the Hines Creek Strand (the Hines Creek Fault) and McKinley Strand (or the Denali Fault) (see TAPS Owners 2001a, Map Appendix, and Noklebery et al. 1994). Some literature sources use McGinnis Glacier Faults (e.g., Plafker et al. 1994b—see references in Section 3.30 of the FEIS), which include a group of faults and are better developed west of this area, for the Hines Creek Fault also. In the text of Section 3.2.7, the "Hines Creek Fault" has been changed to "McGinnis Glacier Faults."

00098-282: The text in Section 3.3.2.1 has been revised.

00098-283: The sentence describes the effect of permafrost degradation, including potential soil liquefaction at MP 735-736. As presented in the sentence, no claim is made that the soil liquefaction potential at MP 735-736 would fail the pipeline if a major earthquake occurs. Instead, the sentence claims that frozen soil has thawed at MP 735-736. The site has soil liquefaction potential in case a major earthquake occurs. The sentence is used to show an example that liquefiable soils formed from thawed soil can exist along the TAPS. No text change has been made to Section 3.3.2.2. (See also the response for Comment 00098-384.)

00098-284: Changes have been made to the text in Section 3.4.2 as appropriate.

00098-285: The EIS does not ignore the fact that liquefaction can occur only under very specific geologic, seismic, and hydrologic conditions. These conditions are water saturated, non-cohesive sandy soils under an active seismic environment. Unfortunately, non-cohesive, sandy sediments of fluvial, glaciofluvial, and lacustrine (lake) origins are very common along the TAPS. Groundwater tables are generally shallow, either because the TAPS was located along major valleys or the presence of permafrost creates an impermeable barrier for the groundwater to drain. Earthquakes are active, especially near the southern part of Alaska. With these conditions present, liquefaction potential cannot be ignored.

Permafrost can occur in any kind of geologic material in cold regions, and it is not commonly limited to geologic material with high silt or clay content.

The text in Section 4.3.2 has been revised as appropriate.

00098-286: Information on the Atigun spill of June 1979 has been added to the text. In this spill, oil entered the Atigun River and produced an oil slick that traveled 25 miles downstream. The Behr-Andes et al. reference (Tundra Spill Cleanup and Remediation Tactics: A Study of Historical Spills and Literature 2002) has been added to the reference list in Section 3.30 of the FEIS.

00098-287: Information on the Atigun spill of June 1979 has been added to the text. In this spill, oil entered the Atigun River and produced an oil slick that traveled 25 miles downstream. The Behr-Andes et al. reference (Tundra Spill Cleanup and Remediation Tactics: A Study of Historical Spills and Literature 2002) has been added to the reference list in Section 3.30 of the FEIS.

00098-288: Updated information on the MP 400 spill has been added to the text. See the text box in Section 4.1.1.8.

00098-289: The text in Section 3.11.1.1 has been revised as suggested.

00098-290: Data provided by APSC shows the maximum design capacity of each of the stack injection systems is 10,000 gallons per day. These data were correctly applied in Appendix C (see Table C-9). The appropriate text change in Section 3.16.4 has been made.

00098-291: Soil stockpiling at the VMT is authorized for periods up to four years. The expanded discussion of contaminated soil management appearing in Section C.6.12 is correct. Appropriate changes have been made to the text in Section 3.16.4.

00098-292: The complex environmental interrelationships associated with the proposed renewal of the TAPS right-of-way coupled with the diversity of reader interests and needs require the assembly of large amounts of information in the EIS. Cross-referencing is a useful tool to avoid duplication while enabling readers with diverse needs to access sections of interest to them.

00098-293: The FEIS in Section 2 contains a full description of the array of renewal rights.

00098-294: The paragraph in Section 3.21.2 on moose in the North Slope has been rewritten to clarify the apparently contradictory sentences in the DEIS. This includes the addition of information from Carol (2002).

00098-295: The Environmental Atlas contains valuable information on important fish and wildlife resources. The Environmental Atlas will be added to the list of manuals that reflect APSC guidance regarding environmental considerations. We note, however, that information in the Atlas is somewhat dated (although not necessarily incorrect), having been last published in 1993.

00098-296: The VMT has been added to the list of places having a septic system.

00098-297: Text regarding Dalton Highway upgrades has been added to the Section 4.3.15.2 text box as well as to Section 4.7.7.1.

00098-298: Table 4.3-23 has been deleted from the FEIS.

00098-299: The text has been revised throughout the EIS to reflect “APSC-operated landfills.”

00098-300: The text in Section 4.6.2.13.2 has been corrected.

00098-301: The analyses of landslides and liquefaction along the TAPS are provided in the design document (APSC 1974, Appendix Volume 3, Geotechnical Aspects, Section 4). Reference to this document has been added to Section 4.9 of the FEIS.

In sloped areas, one of several protective measures to reduce the liquefaction threat was to bury the pipeline below a liquefiable soil layer. It is generally accepted that frozen soil is nonliquefiable. However, a previously frozen soil may thaw because of the affects of the continuous warming trend in Alaska. Under certain geologic and hydrologic conditions, the previously nonliquefiable soil may become liquefied. Without a detailed study, it is difficult to quantify the extent of the impact of the regional warming on the liquefaction potential. Therefore, a qualitative conclusion stating that "With a continuation of the current warming trend in Alaska, the risk of earthquake-triggered liquefaction and landslides is expected to increase" was made.

00098-302: The sentence describes the general effect of the pipeline on the thermal regime of the permafrost and is correct.

The comment does not provide enough data to justify the conclusion that the warming trend in Alaska may have a minor effect on the permafrost. Physically, a warming over a period of several decades would have a deeper penetrating effect on the thermal regime of the permafrost than the seasonal change of temperature on the ground surface.

The original assumption used to calculate the thermal impact due to the warming oil was over a 30-year time span. Along the TAPS, the effect of the thermal disturbance continues, as demonstrated in several locations. It is uncertain whether the effects of thermal disturbance have approached equilibrium.

The permafrost at MP735-736 has thawed over the last 25 years. Historical temperatures measured at Gulkana showed mean annual air temperature increased in the last 50 years. Temperature profiles measured at a depth of 50 ft showed a warming trend over a period from 1992 to 1995 (see Michael Baker Jr., Inc., 2001, MP735 Aboveground Pipeline Assessment) at two locations near MP 735, one near the VSM and one away from the VSM. If the warming resulted from the surface disturbance at the VSM, such warming would be less or none at the other location. On the contrary, larger warming was observed at the location away from the VSM than the one near the VSM in which thermosyphons were installed (see Michael Baker Jr., Inc., 2001, MP735 Aboveground Pipeline Assessment). Therefore, the warming in the subsurface at MP735 reflects the combined effects of surface disturbance in a swampy area subjected to a recent climatic warming trend in Alaska. If the warming in Alaska continues over the next 30 years, the discontinuous permafrost near the southern end of the pipeline (Copper River Lowland and Chugach Mountains) would continue to degrade.

00098-303: The sentence in Section 3.3.2.2 has been modified,

00098-304: Section 3.3.2.2 has been modified as appropriate. Frost heave and subsidence have historically occurred throughout Alaska. It is technically correct that "if a subsidence problem is not corrected, it can cause integrity problems ...." Otherwise, no routine monitoring and maintenance for subsidence are needed for the VSMs. (Also see the response for Comment 00098-384.)

00098-305: The referenced text in Section 4.5.1 has been reworded to clarify the assumption being made.

00098-306: The analyses of landslides and liquefaction along the TAPS right-of-way are provided in the design document (APSC 1974, Appendix Volume 3, Geotechnical Aspects, Section 4). Reference to this document has been added to the FEIS (see Section 4.9).

With the warming trends in the last several decades in Alaska, permafrost, in general, is expected to degrade. During the design of the TAPS, APSC conducted detailed analyses of all pipeline slopes and assessed the slope stability and liquefaction potential of all slopes. In the analyses, the effect of the warming trends along the TAPS was not explicitly considered. The thawing due to heat transfer from the pipeline and the ground surface disturbance was calculated with the assumption of a 30-year time span. With the operation life of the pipeline extended for another 30 years, additional thawing of the permafrost, especially in the southern portion of the TAPS, is likely to occur. On slopes with fine-grained geologic material, soil water generated from the thawing may not be able to drain fast enough such that the pore pressure could increase. Also, new critical surfaces for sliding might emerge. These two factors can potentially cause a previously stable slope to become unstable, especially on slopes that have been assigned a design safety factor of 1 or close to 1 under dynamic loading conditions. Further, if a major earthquake occurs near these areas at a time when the water content of the soil is high, the probability of a landslide can't be ignored. When a landslide occurs, its failure plane or planes can be below the elevations of the pipeline. Under such conditions, the pipe can be carried down the slope with the slide. Therefore, it is concluded that the risk for landslides along the TAPS can increase in the next 30 years.

For the liquefaction issue, liquefaction can occur both on slopes (greater than 2 degrees) and in flat areas (less than 2 degrees) in saturated, loose non-cohesive soils (sands) under intensive shaking (a major earthquake). On sloping ground, liquefied soils tend to move down slope. In flat areas, liquefied soils result in a loss of strength. Structures that use the soils for support may fail.

In the design of the pipeline (APSC 1974, Appendix Volume 3, Geotechnical Aspects, Section 4), the areas of potential liquefied soils for the flat ground areas are estimated to be local and limited. The impact on buried pipe was considered to be less severe than that of equivalent seismic fault movement that was established to be safe. However, it is uncertain if the local and limited estimation is still valid without a detailed analysis. The original assumption of thawing due to the heat transfer from the pipeline and the ground surface disturbance was for a 30-year time period. Regional warming in Alaska was not explicitly included in the evaluation. The original design met criteria for a liquefiable body of small or large size. Sand bodies of various sizes are common because of the abundance of fluvial and lake deposits along the TAPS (e.g., the Copper River Basin and various basins within U-shaped glacial valleys). If liquefaction occurs in a sand body of intermediate dimensions, local overstressing can develop and threaten the integrity of the pipeline (APSC 2001e, Design Basis Update DB-180, 3rd ed., Rev. 3; reference in Section 4.9 of the FEIS).

In sloped areas, one of several protective measures to reduce the liquefaction threat was to bury the pipeline below a liquefiable soil layer. It is generally accepted that frozen soil is non-liquefiable. However, a previously frozen soil may thaw because of the affects of the continuous warming trend in Alaska. Under certain geologic and hydrologic conditions, the previously non-liquefiable soil may become liquefied. Without a detailed study, it is difficult to quantify the extent of the impact of the regional warming on the liquefaction potential. Therefore, a qualitative conclusion stating that "With a continuation of the current warming trend in Alaska, the risk of earthquake-triggered liquefaction and landslides is expected to increase" was made.

00098-307: The Fairbanks area has been extensively disturbed by historical gold mining activities. The permafrost in Fairbanks area is likely to have been degraded because of the mining activities.

Figure 3.12-1 shows the trend in annual mean air temperature at Fairbanks for the 27-year period since the start of TAPS operation. However, a longer-period record shows that mean annual air temperatures for the 20-year period after 1976 increased by 1.5°C over the prior 20-year period (Osterkamp and Romanovsky 1999—see reference in Section 3.30 of the FEIS).

00098-308: Available empirical evidence supports the statement that the warm-oil pipeline has, indeed, induced thaw in permafrost soils in some locations, despite the mitigative design features of TAPS. Section 4.1.2.2 of the EIS refers to the pipeline's "potential" to induce thawing to demonstrate how this anticipated impact was addressed in the original stipulations, specifically Stipulation 3.3.1. The comment points out, further, that subsidence of the ground surface as well as other impacts have resulted from thawing of permafrost. In context, Section 4.1.2.2 adequately recognizes the potential impacts of permafrost thawing. The actual occurrence of such changes and the subsequent consequences are more properly discussed in the "Environmental Consequences" portion of the EIS. See Sections 4.3.2, 4.5.2.2, 4.6.2.2, and 4.7.6.1 for more detail.

00098-309: In context, the discussion makes a clear distinction between "thaw stable" and "thaw unstable" soils. The comment also notes that consequences of thawing of permafrost have been recognized in Alaska for some time. Indeed, Stipulation 3.3.1 in the Federal Grant clearly anticipates that. The comment further contends that, after 25 years of TAPS operations, the effects of thermal disturbance are approaching equilibrium. This would undoubtedly be the case if the system were not dynamic over that time period. Changes in oil throughput and temperature (e.g., introducing oil with higher temperature recovered from newly developed fields), potential increases of air temperature due to the warming trend in Alaska, as well as local ground disturbances (e.g., excavations) for the purposes of maintenance or upgrade of pipeline segments may all serve to redefine the thermal equilibrium points at some locations along the pipeline. Such activities can also be anticipated throughout future pipeline operations. However, these changes are likely to be less dramatic at lower throughputs of initially cooler crude oil that can be anticipated. The majority of thermal equilibration has already occurred. Consequently, the thermal equilibrium point at any location along the pipeline can be expected to change in response to any such activities or other changes to ambient conditions and the entire system will re-equilibrate.

00098-310: The size of the thaw bulb depends on the balance of the heat flux in the subsurface. The heat flux primarily comes from the pipeline and solar insolation. As these two variables changed with time, it is not justified to claim "the TAPS buried pipeline is approaching equilibrium after 25 years of operation."

The throughput of the pipeline is likely to decline with time in the next 30 years, and the climate in Alaska is becoming warmer. Therefore, the balance of the heat flux in the subsurface continues to change. Without a detailed analysis and a reasonable estimate of the warming, it is not difficult to generally conclude that "On the northern end of the pipeline (north of Atigun Pass) the permafrost is cold (mean annual temperature less than -5 degree C) and it is conceivable that some refreezing of the thaw bulb can take place, even with a warming climate. In the warm permafrost region (south of Atigun Pass) little or no refreezing is expected due to the continued thermal input from the pipeline ..."

A detailed study of soil conditions is in progress and results may shed more light on this issue.

No change is made to the text.

00098-311: We believe that APSC and continued stability of the TAPS will benefit from comparing the conditions of the thaw bulb with the original estimate when the TAPS was built.

00098-312: At the time the analysis was performed, APSC's safety performance data were not available for the second half of 2001 or any of 2002. Therefore, safety data for the most recent full year for which reporting data were available (2000) was used to calculate the total APSC and contractor recordable injuries incidence rates. However, these data, i.e., 64 recordable and 20 lost workday injuries, are generally comparable to the more recent safety data cited in the comment.

00098-313: The referenced text on in Section 3.1.2.1.6 has been corrected.

00098-314: The sentence in Section 3.17.1 has been changed to reflect the information in the comment.

00098-315: OSHA injury incidence rates are normally expressed as cases or days per 100 full-time employees using 200,000 employee hours as the equivalent. The Bureau of Labor Statistics reports deaths per 100,000 workers. The National Safety Council has also adopted these units in their database of unintentional injuries. To avoid confusion, it is necessary to maintain consistency with these data sources by applying standard units in the EIS.

00098-316: In attempting to estimate the inhalation risk posed by operation of the VMT, the assessment was hampered by the fact that ambient air concentrations of benzene at the fenceline and in the city of Valdez were only available from the year 1991. As stated in the comment, since that time vapor emissions from the VMT have been decreased by a factor of more than 10 by the installation of a vapor control system in 1998. However, this was not critically important in estimating the risk in Valdez, because the VMT was shown to contribute only about 10% of the ambient VOC level in Valdez (e.g., 10% of the 5 mg/m3 benzene concentration). Therefore, only 10% of the ambient level was scaled with projected future throughputs. Although the VOC level may have decreased in the city of Valdez due to decreased emissions from other sources, the 1991 level was used for the risk estimation due to a lack of more recent data.

For the fenceline risk level, the option of decreasing the estimated concentration by a factor of 10 to account for the emission controls was considered. For benzene, this would have decreased the input concentration from about 22 to 2.2 mg/m3. However, this correction would have decreased the benzene concentration to a level lower than the ambient level in most U.S. cities, which was also considered to be non-realistic. Therefore, the measured 1991 VOC levels were used in the risk calculations, with the caveat that the risk was likely overestimated because of emission reductions. It is recommended that current ambient VOC levels at the fenceline and in the city of Valdez be measured to allow for an accurate, updated evaluation of risk levels. However, even assuming the 1991 VOC levels, the cancer risks estimated at the fenceline and in Valdez were within the level generally not requiring mitigating actions under U.S. EPA policy (EPA 1990).

00098-317: Table 3.14-1 has been revised.

00098-318: Table 4.3-23 has been deleted from the FEIS.

00098-319: Changes have been made to the map.

00098-320: A footnote has been added to the text in Section 1.3 as suggested.

00098-321: Thank you for your comment; however, the suggested text change to Section 1.4 has not been made

00098-322: Figure 1-4 in the DEIS is presented as an example of a pump station and not as a typical station. To speak to the features of all the pump stations, a figure of the most complex site was needed. No changes have been made to the figure or text (the figure is Map 1-4 in the FEIS).

00098-323: The paragraph should follow the first paragraph under the Technical heading in Section 2.2.2. The text has been changed accordingly in the FEIS.

00098-324: Thank you for your comment.

00098-325: The referenced text in Section 3.1.2.2.2 has been changed to clarify the description of the North Slope. With the exception of the suggested change in the last paragraph of the comment, the referenced text has also been changed to clarify the description of the infrastructure at the North Slope. The changes suggested in the last paragraph of the comment were not made because the opinions expressed by the commentor may not be supported by facts.

00098-326: Figure 3.1-6 of the DEIS has been revised and is Map 3.1-3 in the FEIS.

The community of Umiat is included as a positional guide for the small location map, and remains in the FEIS.

The areas proposed-for-leasing areas change with time and as such can be considered to be speculative, and were not included in Figure 3.1-6 in the DEIS (Map 3.1-3 in the FEIS).

00098-327: Text has been added to Section 4.7.8.3 which describes the referenced impact of the no-action alternative in the cumulative analysis in more detail.

00098-328: A natural gas pipeline could operate independently of the TAPS if economic conditions favored natural gas production on the North Slope. While natural gas is a by-product of petroleum production, petroleum production was not viewed as necessary for exploitation of the North Slope's natural gas reserves. For this reason, a natural gas pipeline was included in the list of other actions for the no-action (no TAPS renewal) alternative.

00098-329: At the level of analysis included in the cumulative analysis, which was based on overall level of North Slope activities, such detail is not required to understand the cumulative impact conclusions.

00098-330: A reference to the BP Alaska website describing North Slope operations ("Arctic Energy") has been added to Section 4.7.4.1.2 of the EIS. This site provides much more informative than it is possible to provide in this section of the EIS.

00098-331: It is unclear at the present time when a natural gas pipeline would be built, and the probability of such an occurrence changes daily with economic and political conditions. No changes were made to the text in Section 4.7.4.4.2.

00098-332: The EIS has been revised to include flooded gravel mine sites as a source of water in Section 4.7.6.4.

00098-333: A natural gas pipeline could operate independently of the TAPS if economic conditions favored natural gas production on the North Slope. While natural gas is a by-product of petroleum production, petroleum production was not viewed as necessary for exploitation of the North Slope's natural gas reserves. For this reason, a natural gas pipeline was included in the list of other actions for the no-action (no TAPS renewal) alternative.

00098-334: For this EIS, water occurring beneath the ground surface is considered to be groundwater. Its depth or quality is not considered in the definition. By historical practice, groundwater in this region is further classified as *suprapermafrost* and *subpermafrost* according to its location relative to permafrost.

00098-335: The observation expressed by this comment is consistent with Section 4.8.3 of the EIS, which states that under the no-action alternative, the ability to use North Slope oil resources would cease until an alternative means of transportation was developed.

00098-336: Injection wells used for disposal of oil production-related water or production wastes are categorized as Class II wells. The text has been changed in Section 4.7.6.10.1 to reflect this fact.

00098-337: The analysis of the cumulative impacts of TAPS includes an assessment of the impacts of a natural gas pipeline project on the economy of the state. As a gas pipeline would be a separate action under NEPA, the analysis assumed that a gas pipeline project would be independent of TAPS, with the inclusion of any impacts of a shorter TAPS renewal period on a natural gas pipeline being inappropriate.

Additional text has been added to Section 4.7.8.3 describing in more detail the impact of the No Action alternative.

00098-338: Section 2.2 of the FEIS has been revised.

00098-339: Sections 4.3.23.2 and 4.5.2.23.2 have been revised to state that the Alaska Division of Governmental Coordination determined on 9/10/02 that the TAPS Owner's application for renewal of the Federal Grant of Right-of-Way for TAPS was consistent with applicable Coastal Management Programs. In addition, the BLM notified the TAPS Owners on 10/17/02 that the consistency requirement had been satisfied by the state determination.

00098-340: Section 3.19 identifies that designated essential fish habitat (EFH) is present along the TAPS ROW and in Prince William Sound. Sections 4.3.16.1 and 4.4.4.10 have been modified to identify that EFH consultation with NMFS was completed and to summarize the conclusions of the EFH assessment. Section 4.3.18 has been modified to include a description of the Biological Evaluation and Section 7 consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service

00098-341: Sections 4.3.16 and 4.4.4.10 have been modified to identify that essential fish habitat (EFH) consultation with NMFS has been completed, and to summarize the conclusions of the EFH assessment with respect to oil spills.

00098-342: Table 4.3-23 has been deleted from the FEIS.

00098-343: Thank you for your comment.

00098-344: Sections 4.3.23.2 and 4.5.2.23.2 have been revised to state that the Alaska Division of Governmental Coordination determined on 9/10/02 that the TAPS Owner's application for renewal of the Federal Grant of Right-of-Way for TAPS was consistent with applicable Coastal Management Programs. In addition, the BLM notified the TAPS Owners on 10/17/02 that the consistency requirement had been satisfied by the state determination.

00098-345: Table 4.7-12 has been modified to be consistent with Section 4.7.7.4. The range of impacts to threatened and endangered species is now presented as "none to negligible."

00098-346: Section 3.19 identifies that designated EFH habitat is present along the TAPS ROW and in Prince William Sound. Sections 4.3.16.1 (proposed action) and 4.4.4.10 (oil spill analysis) have been modified to identify that EFH consultation with NMFS has been completed and to summarize the conclusions of the EFH assessment. See also Section 5.6, Agency Consultation.

00098-347: Section 4.3.16.1 has been modified to identify that EFH consultation with NMFS was completed and to summarize the conclusions of the EFH assessment. Section 4.3.18 has been modified to include a description of the Biological Evaluation and Section 7 consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service.

00098-348: Sections 4.3.23.2 and 4.5.2.23.2 have been revised to state that the Alaska Division of Governmental Coordination determined on 9/10/02 that the TAPS Owner's application for renewal of the Federal Grant of Right-of-Way for TAPS was consistent with applicable Coastal Management Programs. In addition, the BLM notified the TAPS Owners on 10/17/02 that the consistency requirement had been satisfied by the state determination.

00098-349: Appendix E has been revised, in part to provide a more sound basis for the evaluation of impacts under the ANILCA and in part to discuss the basis for these impacts more thoroughly. That stated, the conclusions have not been changed. The major concern is impacts of the TAPS (stated as small) in conjunction with current and continuing North Slope oil exploration and development, which meet criteria for past, present, and reasonably foreseeable activities. Oil-related activities have been identified as areas of concern in three separate studies, referenced in the revised version of Appendix E, particularly in their displacement of subsistence users from key areas of their subsistence use areas.

00098-350: The text in Section 3.23.5 of the EIS has been changed to reflect information provided in the comment.

00098-351: Section 3.24.1 has been substantially revised, and now includes a more detailed discussion of the competing definitions of subsistence in Alaska.

00098-352: Thank you for the considerable effort in assembling recommended text insertions. Section 3.24 of the EIS (subsistence affected environment), as well as sections that deal with impacts to subsistence (e.g., 4.3.20), have been revised to identify sources of impacts more clearly. In the case of sport hunting and fishing, the issue is more one of competing harvests, both by recreational users and (in the case of fishing) from commercial harvests. The FEIS presents data on harvest competition through approximating sport vs. subsistence harvests for game, and through presenting additional data on subsistence fisheries, both analyses tied explicitly to the communities of interest in the EIS (see Section 3.24.4).

00098-353: Section 3.24.4 (new section number in the FEIS) has been revised to present additional data, including an approximation of the distinction between subsistence and sport harvests. That stated, the statement referred to in the comment is indeed accurate regarding the formal distinction between sport and subsistence harvests.

00098-354: Section 3.24.3 has been revised, including minor changes to the text accompanying the referenced figure. The FEIS does not include recommended changes to log or semi-log plots, in part because many of the readers likely would not understand such a transformation. Similarly, it does not include the results of statistical analyses where so little variability can be explained by simple linear models. The point in the comment concerning variability over time is consistent with the position in the FEIS.

00098-355: Section 4.3.20 has been revised to present potential impacts in greater detail, and to place them in clearer perspective with regard to their likely magnitude vis a vis other potential sources of impact. Access road use by sport hunters and anglers has been noted by both rural Alaskans in the vicinity of the pipeline and by non-local hunters in the area, and although not the result of published research the preparers of the EIS felt it was worth noting in the interest of identifying all possible TAPS-related sources of impact.

00098-356: Section 3.24.1, in particular, has been expanded to discuss both the dual state-federal definition of subsistence and the management of subsistence in greater detail.

00098-357: Sections 3.24.2 (community subsistence patterns) and 4.3.20 have been revised to consider additional sources of pressure on subsistence.

00098-358: Constraints on subsistence activities in national parks are another cumulative impact—one of the past, present, and reasonably foreseeable actions, which together represent such impacts. Section 4.7.8.1 has been expanded to discuss such impacts, and concern with their aggregated effect, more clearly.

00098-359: Section 4.3.20.1 has been expanded to discuss results of the Wolfe and Walker paper, referenced in the comment, in greater detail.

00098-360: The alternative to not renew the federal grant of right-of-way receives extensive analysis in the EIS. For example, please see Section 4.6, No-Action Alternative Analysis. A description of the termination activities that would be required and a general description of what would be involved in implementing a decision to not renew the federal grant are used for the purpose of the analysis in this EIS. However, if the grant is not renewed a more specific and detailed proposal for dismantling, removal, and restoration of the TAPS would have to be submitted by the TAPS owners and that would become the subject of a separate EIS. Until that happens, it remains necessary to acknowledge speculation regarding the details of the termination activities.

00098-361: Thank you for your comment.

00098-362: Table 3.1-1 has been corrected to include 284 secondary roads.

00098-363: In the absence of eligibility determinations, for the purposes of an effect determination, the sites are considered eligible until documentation proves otherwise. Therefore, such a lack of National Register determinations does not preclude an analysis of possible effects on cultural resources.

00098-364: The alternative to not renew the federal grant of right-of-way receives extensive analysis in the EIS. For example, please see Section 4.6, No-Action Alternative Analysis. A description of the termination activities that would be required and a general description of what would be involved in implementing a decision to not renew the federal grant are used for the purpose of the analysis in this EIS. However, if the grant is not renewed a more specific and detailed proposal for dismantling, removal, and restoration of the TAPS would have to be submitted by the TAPS owners and that would become the subject of a separate EIS. Until that happens, it remains necessary to acknowledge speculation regarding the details of the termination activities.

00098-365: The impacts of petroleum transport beyond Prince William Sound have been added to Section 4.7, “Cumulative Impacts.”

00098-366: Appropriate changes have been made to the glossary.

00098-367: Sections 3.24, 4.3.20, 4.4.4.14, and 4.7.8.1, in particular, have been revised and include much of the information (and several of the references) included in the comment.

00098-368: The sentence in Section 4.7 has been removed from the text.

00098-369: Both the logic and conclusions underlying the ANILCA analysis were revisited following the receipt of this and other comments on the DEIS. The conclusion remains the same for the cumulative-proposed action case. The cumulative actions of particular concern are North Slope oil development in the Nuiqsut subsistence use area. Concerns for subsistence impacts, due largely to restrictions from large portions of the subsistence use area, have already been expressed by previously conducted studies on the North Slope, as noted in the revised version of Appendix E.

Appendix E has also been expanded to include evaluations required under ANILCA § 810(a)(3)(A), (B) and (C), which was purposefully left out of the DEIS pending comments on the conclusions reached in the first stage of the impact analysis.

00098-370: The referenced text in Section 3.1.2 has been corrected.

00098-371: The referenced text in Section 3.1.2.1.1 has been changed to clarify the discussion and to correct an apparent discrepancy in the document.

00098-372: The referenced text in Section 3.1.2.1.2 has been corrected.

00098-373: The referenced text in Section 3.1.2.1.2 has been changed to clarify the discussion and to correct an apparent discrepancy in the document.

00098-374: The referenced table identifies both active and inactive wells. The information in the table is the most recent and complete information available on water wells along the TAPS ROW.

00098-375: As pointed out by the commentor and confirmed by checking the website http://www.gcr1.com/5010web/main.cfm?Site=FVM, the referenced text in Section 3.1.2.1.7 has been corrected.

00098-376: The reference has been checked and the original text in Section 3.2.9 is correct.

00098-377: The referenced sentence in Section 3.3 has been modified.

00098-378: The referenced sentence in Section 3.3 has been deleted.

00098-379: Spill volume estimates for scenarios involving small, moderate, and large crude oil leaks were made in a manner consistent with the most recent pipeline risk assessment conducted for the TAPS (Capstone, 2001). Both the DEIS and the Capstone assessment accounted for both dynamic and static pipeline pressure effects in estimating pipeline spill or leak volumes. We believe that these estimates are made only slightly conservative by assuming no depressurization. The dynamic effects on the spill "drain-down" rate occur prior to leak detection when pumps are running and isolation valves are open. The static effects are primarily gravitationally driven and occur after the OCC detects the leak, shuts down the pumps, and closes the valves. During the dynamic spill phase, the dynamic line pressure controls the leak rate through the hole in the pipeline. A constant dynamic pressure is assumed until the pumps are stopped. "Blowdown" caused by depressurization effects from the hole in the pipe are assumed to not appreciably affect the estimated dynamic spill volume. For small to moderate leaks, the pumps will increase output and offset much of the pressure drop cause by the leak and therefore should have minor effect on the dynamic spill rate. Since the leak detection time is shorter for large leaks, the effects on the estimated spill volumes should be small.

00098-380: The text in Section 4.4.1.1.1 has been modified with insertion of leaks caused by washout events.

00098-381: The text has been modified with the added phrase "seismically induced."

00098-382: Methodology for spills analysis and for other technical disciplines covered in the EIS are given in Appendix A of the EIS. The spill scenarios and impacts associated with the spills along the pipeline and at the VMT are given in Section 4.4 of the EIS. Similarly spill scenarios and impacts associated with transportation of oil from the VMT and with production and exploration activities on the North Slope are provided in Section 4.7 of the EIS. Cross-references and tables/figures are provided as appropriate in the above sections in the EIS.

00098-383: The reviewers comment is noted.

00098-384: The analyses of landslides and liquefaction along the TAPS right-of-way are provided in the design document (APSC 1974, Appendix Volume 3, Geotechnical Aspects, Section 4). Reference to this document has been added to the FEIS (see Section 4.9).

With the warming trends in the last several decades in Alaska, permafrost, in general, is expected to degrade. During the design of the TAPS, APSC conducted detailed analyses of all pipeline slopes and assessed the slope stability and liquefaction potential of all slopes. In the analyses, the effect of the warming trends along the TAPS was not explicitly considered. The thawing due to heat transfer from the pipeline and the ground surface disturbance was calculated with the assumption of a 30-year time span. With the operation life of the pipeline extended for another 30 years, additional thawing of the permafrost, especially in the southern portion of the TAPS, is likely to occur. On slopes with fine-grained geologic material, soil water generated from the thawing may not be able to drain fast enough such that the pore pressure could increase. Also, new critical surfaces for sliding might emerge. These two factors can potentially cause a previously stable slope to become unstable, especially on slopes that have been assigned a design safety factor of 1 or close to 1 under dynamic loading conditions. Further, if a major earthquake occurs near these areas at a time when the water content of the soil is high, the probability of a landslide can't be ignored. When a landslide occurs, its failure plane or planes can be below the elevations of the pipeline. Under such conditions, the pipe can be carried down the slope with the slide. Therefore, it is concluded that the risk for landslides along the TAPS can increase in the next 30 years.

For the liquefaction issue, liquefaction can occur both on slopes (greater than 2 degrees) and in flat areas (less than 2 degrees) in saturated, loose non-cohesive soils (sands) under intensive shaking (a major earthquake). On sloping ground, liquefied soils tend to move down slope. In flat areas, liquefied soils result in a loss of strength. Structures that use the soils for support may fail.

In the design of the pipeline (APSC 1974, Appendix Volume 3, Geotechnical Aspects, Section 4), the areas of potential liquefied soils for the flat ground areas are estimated to be local and limited. The impact on buried pipe was considered to be less severe than that of equivalent seismic fault movement that was established to be safe. However, it is uncertain if the local and limited estimation is still valid without a detailed analysis. The original assumption of thawing due to the heat transfer from the pipeline and the ground surface disturbance was for a 30-year time period. Regional warming in Alaska was not explicitly included in the evaluation. The original design met criteria for a liquefiable body of small or large size. Sand bodies of various sizes are common because of the abundance of fluvial and lake deposits along the TAPS (e.g., the Copper River Basin and various basins within U-shaped glacial valleys). If liquefaction occurs in a sand body of intermediate dimensions, local overstressing can develop and threaten the integrity of the pipeline (APSC 2001e, Design Basis Update DB-180, 3rd ed., Rev. 3; reference in Section 4.9 of the FEIS).

In sloped areas, one of several protective measures to reduce the liquefaction threat was to bury the pipeline below a liquefiable soil layer. It is generally accepted that frozen soil is non-liquefiable. However, a previously frozen soil may thaw because of the affects of the continuous warming trend in Alaska. Under certain geologic and hydrologic conditions, the previously non-liquefiable soil may become liquefied. Without a detailed study, it is difficult to quantify the extent of the impact of the regional warming on the liquefaction potential. Therefore, a qualitative conclusion stating that "With a continuation of the current warming trend in Alaska, the risk of earthquake-triggered liquefaction and landslides is expected to increase" was made.

00098-385: We believe that the comment meant to compare Sections 4.2.2.4.2 (not 4.2.2.4.3) and 4.2.2.6.2. The two sections are indeed similar, however, they serve separate purposes. Section 4.2.2.4.2 establishes that mainline valves, as well as other pipeline components require periodic maintenance and repair, but also introduces the fact that improvements (i.e. vaulting) are also underway. Section 4.2.2.6.2 is a subsection of 4.2.2.6, "Planned Upgrades and Repairs," one such upgrade being valve vaulting. We believe that it is important to distinguish activities done for maintenance or repair reasons from those done for purpose of upgrade. We also understand that there is a practical relationship between the two activities with respect to buried valves in that maintenance is also performed on the valves that have been excavated for the purpose of vaulting. The text in Section 4.2.4.2 indicates that relationship and refers the reader to Section 4.2.2.6.2 for additional discussions regarding vaulting. Although the two sections deserve to remain, we have decided to change the title of Section 4.2.2.4.2 to "Valve Maintenance and Repair" to clarify the distinction between the two sections.

00098-386: Table 4.3-23 has been deleted from the FEIS.

00098-387: The summary of the EIS has been revised to more thoroughly discuss cumulative impacts. For Chapter 4.7, the summary of the chapter remains at the end after the reader has been provided with the analysis for each technical topic.

00098-388: A natural gas pipeline could operate independently of the TAPS if economic conditions favored natural gas production on the North Slope. While natural gas is a by-product of petroleum production, petroleum production was not viewed as necessary for exploitation of the North Slope's natural gas reserves. For this reason, a natural gas pipeline was included in the list of other actions for the no-action (no TAPS renewal) alternative. However, the words "likely to occur" has been changed to "potentially occurring."

00098-389: This comment refers to the Summary of cumulative human health impacts to workers and the general public provided in Section 4.7.6.11.3. The word "health" has been added to the introductory paragraph to clarify that the summary is for health impacts from all sources, not just air. This is consistent with the summarization of cumulative impacts for all resources evaluated in Section 4.7.6.

00098-390: The summary of the EIS has been revised to more consistently portray the text of the EIS.

00098-391: There is no need to add the suggested sentence to Section 4.2.2.6.4. The footnote to the preceding paragraph already established the fact that many of the material sites are in joint use with the Alaska DOT.

00098-392: Data regarding the presence of PCB-containing equipment in TAPS infrastructure was obtained from APSC's own infrastructure inventories, the most recent of which that we are aware of was completed in 1995. No other more recent studies or data were made available by APSC. Refer to Section C.6.1 and the references therein. This comment does not introduced any new citable data that refutes the circumstances reported on in the cited APSC studies. There is, therefore, no basis for change to the text.

00098-393: Thank you for the clarification. JPO confirms that APSC initiated the valve vaulting program. However, JPO also indicates that it now has directed APSC to complete the program and extend it to all the valves. All of the suggested changes have been made to Section 4.2.2.6.2, except for the change that indicates six valves will remain unvaulted.

00098-394: The parenthetical note regarding the Yukon River Highway bridge has been removed from Section 4.2.4.1.

00098-395: Modifications have been made to the text in Section 4.2.4.2 and a new footnote has been added to capture the fact that state highway culverts would remain unchanged.

00098-396: The referenced footnote in Section 4.2.4.2 has been removed.

00098-397: The data provided in the DEIS regarding the presence of PCBs in TAPS infrastructure was derived from APSC's 1995 inventory verification effort. To our knowledge, no more recent inventory exists. This comment does not provide new data that would indicate a change in the circumstances reported on in the 1995 study. In the absence of citable new data, no change to the text is warranted.

00098-398: This comment provided four examples of buried pipeline segments that were abandoned in place as long ago as 1975 with no apparent evidence of frost heave. Unfortunately, the comment did not also provide the geologic and hydrologic details of these abandonments or specify the evidence (beyond obvious visual evidence) by which it can be concluded that these segments have not moved from their original positions since abandonment or identified the manner by which the abandoned segments were monitored for movement. These experiences would have relevance only if the abandoned pipeline segments were in thaw-unstable soil (i.e. silty soils rather than gravel). The bedding and backfill (gravelly material) used in original installation would help the pipe withstand freeze pressures and resist heaving forces. For segments abandoned in thaw-stable soils or in permafrost below the active layer and under no large groundwater hydrostatic pressures, frost-heaving or jacking is not likely to occur. The text clearly indicates that frost-heaving is only a concern for segments abandoned in thaw-unstable permafrost. As we understand, it was concern for the development of a thaw bulb that resulted in the original design calling for refrigeration of the soil surrounding the buried pipeline in thaw-unstable regions. Although an abandoned pipeline segment no longer represents a heat source (i.e. the crude oil), freeze-thaw cycles will nevertheless continue through natural process in thaw-unstable regions and an empty and unanchored pipeline segment may exhibit sufficient buoyancy during thaw cycles to make movement possible. No change has been made to the text.

00098-399: The text in Section 4.6.2.2 has been modified.

00098-400: Good engineering practice would still provide for fuel contingencies in the event electric power is interrupted. In fact, data provided by APSC indicates as much (see Table 4.2-1). Consequently, storage of turbine fuel will be completely eliminated only at those pump stations that are completely removed, but will continue to occur (probably at reduced volumes) at the stations where the pumps are converted to electric motor-driven units. Appropriate changes have been made to the text in Section 4.2.5.3.

00098-401: Earthquake-triggered liquefaction and landslides are very difficult to predict and accurately locate. The locations of areas susceptible to liquefaction and landslides may change with subsurface geotechnical conditions. Because the existing program of surveillance, monitoring, and maintenance would not be able to predict an earthquake, it is unlikely that mitigation prior to any damage can be effectively made at a reasonable cost. No change is made to the text in Section 4.3.2.

00098-402: An appropriate change has been made to the text in Section 4.2.2.5.4.

00098-403: Although the potential for VSM movement due to high water flows is acknowledged, the suggested change has been made to the text in Section 4.2.2.5.3.

00098-404: The magnesium anode will have disintegrated to a large degree to magnesium oxide and that the remnants of the anode need not be retrieved. However, some excavation is still required to locate the bonding wire that connected the anode to the pipeline so that it can be attached to the new anode, which, for maximum performance, would need to be installed at or near the elevation of the bottom of the adjacent pipeline. Nevertheless, a change has been made to the text to accommodate the comment. Regarding cathodic protection systems utilizing deep well anodes or ground beds, maintenance of such systems over time will be less intrusive. However, the possibility still exists that such systems will still need periodic replacement. As noted, the TAPS owners estimated that approximately six to eight such replacements are expected over the period 2004 through 2034. Beside information provided in the comment itself, no additional data have been presented to overturn that original estimation. No additional changes to the text are warranted.

00098-405: The text box in Section 4.1.2.2.5 has been revised.

00098-406: Figure 04.01-04 has been corrected.

00098-407: APSC initiated the project, and JPO has since directed that all valves will receive a vault. The text has been modified accordingly in Sections 4.2.2.4.2 and 4.2.2.6.2.

00098-408: Figures 4.1-1 and 4.1-2 have been corrected.

00098-409: In Section 3.3, the referenced phrase has been deleted.

00098-410: The text of Section 4.3.14 has not been changed. Facilities associated with TAPS do include airports, access roads, and material sites. The text does not say that all such facilities are owned by APSC.

00098-411: The statements in the EIS reflect the only documented status of the septic systems (Mikkelsen 1997—see Section 3.30 for the reference). The commentor has not provided independent data or a citable reference that would support a change to the text. However, additional language has been included in the text to reflect the potential impact on septic systems from proposed pump station upgrades.

00098-412: The text has been changed accordingly.

00098-413: The text of the footnote has been modified accordingly.

00098-414: The joint uses of OMS sites are described in Section 3.5 (Sand, Gravel, and Quarry Resources) and are considered to be background information on the affected environment. They are not presented in the Environmental Consequences section. No change is made in the text.

00098-415: Modifications have been made to Section 4.3.3, as appropriate.

A current soils geohazard study is in progress. This study will result in identification of areas most likely subject to slope instability.

00098-416: The text in Section 4.3.2 has been revised as suggested.

00098-417: The text in Section 4.3.2 has been changed in response to this comment.

00098-418: The reference to the thermokarst lakes has been deleted from Section 4.3.2.

00098-419: The size of the thaw bulb depends on the balance of the heat flux in the subsurface. The heat flux primarily comes from the pipeline and solar insolation. As these two variables changed with time, it is not justified to claim "the TAPS buried pipeline is approaching equilibrium after 25 years of operation."

The throughput of the pipeline is likely to decline with time in the next 30 years, and the climate in Alaska is becoming warmer. Therefore, the balance of the heat flux in the subsurface continues to change. Without a detailed analysis and a reasonable estimate of the warming, it is not difficult to generally conclude that "On the northern end of the pipeline (north of Atigun Pass) the permafrost is cold (mean annual temperature less than -5 degree C) and it is conceivable that some refreezing of the thaw bulb can take place, even with a warming climate. In the warm permafrost region (south of Atigun Pass) little or no refreezing is expected due to the continued thermal input from the pipeline ..."

A detailed study of soil conditions is in progress and results may shed more light on this issue.

The statement "and ground settlement could resume" has been deleted.

00098-420: The size of the thaw bulb depends on the balance of the heat flux in the subsurface. The heat flux primarily comes from the pipeline and solar insolation. As these two variables changed with time, it is not justified to claim "the TAPS buried pipeline is approaching equilibrium after 25 years of operation."

The throughput of the pipeline is likely to decline with time in the next 30 years, and the climate in Alaska is becoming warmer. Therefore, the balance of the heat flux in the subsurface continues to change. Without a detailed analysis and a reasonable estimate of the warming, it is not difficult to generally conclude that "On the northern end of the pipeline (north of Atigun Pass) the permafrost is cold (mean annual temperature less than -5 degree C) and it is conceivable that some refreezing of the thaw bulb can take place, even with a warming climate. In the warm permafrost region (south of Atigun Pass) little or no refreezing is expected due to the continued thermal input from the pipeline ..."

A detailed study of soil conditions is in progress and results may shed more light on this issue.

The design criteria "to last as much as two winters without oil prior to start-up and not be frost-jacked" is more related to the seasonal frost action over a period of two years. The evaluation here is related to a long-term effect of a declining flow rate of warm oil in the pipeline and the aggradation of permafrost proceeding from below the ground surface.

No change has been made in the text.

00098-421: The text has been revised to indicate that generation of chips from traffic will be reduced after the Dalton Highway is chip-sealed or paved. In the long term, the no-action alternative will result in a reduction of traffic on the Dalton Highway.

00098-422: It is possible that under the No Action alternative, at some point in the future, oil would no longer be transported through the Prince William Sound, and as a result, most of the emergency response measures currently in place would be phased out. When that happens, the risk (which is defined as the product of the probability of a spill multiplied by the consequence if the spill occurred) could increase because of (1) the reductions in oil spill prevention and response equipment; (2) reductions in personnel; and (3) continued or increased presence of commercial or pleasure boating in the Sound.

00098-423: A natural gas pipeline could operate independently of the TAPS if economic conditions favored natural gas production on the North Slope. While natural gas is a by-product of petroleum production, petroleum production was not viewed as necessary for exploitation of the North Slope's natural gas reserves. For this reason, a natural gas pipeline was included in the list of other actions for the no-action (no TAPS renewal) alternative.

00098-424: The text of Section 4.3.15.2 has been modified.

00098-425: Sections 3.18 and 4.3.15.1 discuss the differences that exist, and that are expected to continue to exist, between the vegetation communities within the ROW and those in adjacent undisturbed areas.

In part, these differences result from the variations in organic mat thickness, moisture levels, nutrients, organic material, and gravel content between the ROW and adjacent areas. This information is based on studies by McKendrick (2002) that are cited in Sections 3.18 and 4.3.15.1. A referral to these sections has been added to 4.3.15.2.

00098-426: Sections 3.18 and 4.3.15.1 discuss the differences that exist, and that are expected to continue to exist, between the vegetation communities within the ROW and those in adjacent undisturbed areas.

In part, these differences result from the variations in organic mat thickness, moisture levels, nutrients, organic material, and gravel content between the ROW and adjacent areas. This information is based on studies by McKendrick (2002) that are cited ins Sections 3.18 and 4.3.15.1. A referral to these sections has been added to 4.3.15.2.

00098-427: Text in Section 4.3.15.1 has been modified to eliminate use of the word “extensive.”

00098-428: Although the occurrence thermokarst may be a natural phenomenon, when it occurs as a result of pipeline operations and causes changes in biotic communities, it must be identified as an impact of the proposed action.

00098-429: Discussion of the flood at MP 752 has been deleted from Section 4.3.15.1.

00098-430: The last sentence has been deleted as suggested.

00098-431: The referenced text in Section 4.5.1.2.1 has been changed to clarify the meaning of the word “precautions,” but the clause at the end of the sentence has not been deleted. Depending on the severity of the deterioration, the pipeline could be shut down either temporarily to correct the situation or permanently if it is not economical to remedy it.

00098-432: Minimum regret is a term used when any possible outcome is undesirable. What is wanted is the least undesirable outcome. This is a standard term established by the NOAA model, GNOME (NOAA 2000—see Section 4.9 of the FEIS for the reference), used for this study.

00098-433: The typographical error in Section 4.7.6-6 has been corrected.

00098-434: The EIS has been revised in Section 4.7.6.4 to indicate that taliks are unfrozen layers of ground located on top, underneath, or within masses of permafrost, often beneath deep pools below the surface of lakes and rivers. Removal of water from these taliks would reduce the volume of overlying free water in which fish live, thereby affecting oxygen demand and overwintering fish.

00098-435: The historical spill data have been considered in the development of spill scenarios for the EIS. In particular, the historical spill information was used in the derivation of spill frequencies and sizes for scenarios in the anticipated and likely frequency categories (see Section 4.4.1). As is the general practice for NEPA analysis, the EIS discusses impacts associated with a spectrum of spill events ranging from the high frequency/low consequence events to low frequency/high consequence occurrences. Since the risk associated with an accidental occurrence is the product of the probability of the event and the consequence that would result if the event took place, consideration of the entire spectrum of potential occurrences in the EIS ensures that the public is provided with a complete picture of potential impacts.

00098-436: Section 4.7.6.1 has been revised in response to the comment.

00098-437: For the analysis of cumulative impacts (Section 4.7), a natural gas pipeline was assumed to operate independently of the TAPS.

00098-438: The sentence in Section 4.7.4.4.2 has been revised as suggested, including an addition indicating that Delta is southeast of Fairbanks.

00098-439: Section 4.3.18 has been modified for consistency with the Biological Evaluation prepared to support Section 7 consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service. The revised section also identifies the status of the consultation process.

00098-440: Section 3.24.2 has been revised and includes a number of graphic representations of subsistence practices, by region and individual village (with change over time, if possible). Section 4.3.20 has been expanded and includes a synopsis of the Wolfe and Walker article referenced in the comment.

00098-441: As noted at several points in the Subsistence sections of the DEIS, there are limited data available to accurately quantify the impacts of oil development on subsistence in Alaska. Accurate and complete subsistence data will always be of use when considering public policy in Alaska in the future. Therefore, it is suggested that the DEIS recommend that a government agency undertake a comprehensive study of subsistence in Alaska to provide a baseline data for future public policy documents and reference. Both the State and Federal government have programs in place, and adequate financial resources in their existing budgets, to study subsistence in Alaska.

The State government has the responsibility and means to conduct such a beneficial study. The Alaska Department of Fish and Game (ADF&G) already has a Subsistence Division which, in conjunction with the Sport Fish and Wildlife Conservation Divisions of the ADF&G, collects and analyzes subsistence data. The Governor's Operating Budget (available online from the State of Alaska) notes that the Subsistence Division is tasked with coping with the dual management (Federal and State) of subsistence resources in Alaska, implementing appropriate subsistence laws and regulations, and gathering subsistence data. The Operating Budged lists, among other things, these key goals for activities and data collection for the subsistence unit in FY 2003:

- The Subsistence Division is expected to gather fisheries harvest data from 95% of the communities in the interior of Alaska and 25% of the communities in the Alaskan Arctic.

- The Subsistence Division is expected to gather wildlife harvest data from 45% of the communities in the interior of Alaska and 25% of the communities in the Alaskan Arctic.

To fund these and other projects, the Subsistence Division unit will receive approximately 4.4 million dollars in fiscal year 2003 with 51% of the money coming from Federal funds. As noted above, other ADF&G divisions (with their own budgets) will contribute information to augment data collected by the Subsistence Division. In fiscal year 2003, the entire ADF&G is expected to spend 135.7 million dollars.

The Federal Subsistence Management Program should also be involved in the study. The Federal Subsistence Management Program in Alaska is led by the U.S. Fish and Wildlife Service (USFWS) and four other federal agencies: the National Park Service, the Bureau of Land Management, the Bureau of Indian Affairs and the USDA Forest Service. The lead agency, the U.S. Fish and Wildlife Service, maintains a headquarters in Anchorage and employs approximately 500 people statewide with hundreds of others who work part-time or volunteer during field seasons. The USFWS has conducted many fishery and wildlife harvest studies in Alaska and spent 9 million dollars for Sport Fish restoration programs and 5.5 million dollars for wildlife restoration during fiscal year 2001. It is clear that adequate resources have been budgeted for these agencies to collect and analyze subsistence harvest data. It is not appropriate to stipulate requirements for TAPS in relation to this work.

Following comments in the DEIS, the sections in the document dealing with subsistence were carefully reviewed (Sections 3.24, 4.3.20, 4.4.4.14, 4.5.2.20, 4.6.2.20, and 4.7.8.1, and Appendices D and E). In the process of preparing the FEIS, data on subsistence and related topics (e.g., biological resources, sociocultural systems) were reexamined. Although it is almost always desirable to have better data, for the purposes of the analyses of subsistence impacts conducted in this FEIS available data are adequate to arrive at and support the conclusions presented.

Section 3.24.1 has been expanded to discuss dual management of subsistence in greater detail, including responsibilities of the state and federal agencies involved.

00098-442: Thank you for your comment.

00098-443: Thank you for your comment.

00098-444: A paragraph describing the biological evaluation and Endangered Species Act consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service has been added to Section 4.3.18 of the EIS.

Section 3.19 identifies that designated essential fish habitat is present along the TAPS ROW and in Prince William Sound. Sections 4.3.16.1 (proposed action) and 4.4.4.10 (oil spill analysis) have been modified to identify that EFH consultation with the National Marine Fisheries Service has been completed and to summarize the conclusions of the EFH assessment.

Text has been added to Section 5.6 regarding consultation that has taken place with the State Historic Preservation Officer and the 21 federally recognized Tribes to satisfy the requirements of the National Environmental Policy Act and the National Historic Preservation Act.

00098-445: Thank you for your comment.

00098-446: Thank you for your comment.

00098-447: Thank you for your comment.

00098-448: The reader is referred to Section 2.5 of the FEIS, “Alternatives and Issues Considered but Eliminated from Detailed Analysis.”